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The Beattie-Smith Lectures.

(UNIVERSITY OF MELBOURNE.)

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LECTURE II.

THE SELF-PREVENTION OF INSANITY.

TONIGHT my lecture is entitled "The Self-Prevention of Insanity", and I set before myself the case of a man who has reached an age of responsibility and who, while himself apparently normal, has reason to think that in his constitution are sown the seeds of insanity. What can he do or how should he order his life so as to avoid or minimize the risk of a mental breakdown? I might advise him to be moderate in all things; to look after his general health, and to avoid undue strain either bodily or mental; and might offer to him endless maxims and suggestions for the attainment of equanimity and the elimination of worry, and none of these things would be out of place; but just as all true psychotherapists aim at helping their patients to know themselves, so that they may be able to make their own adjustments, to act for themselves and stand alone, so perhaps I may best serve his interests if I try in the main to give him knowledge in order that he may be able to regulate his own life and to formulate his own rules of conduct for the avoidance of insanity. Accordingly, the objects of my lecture will be: (i) to tell him something of the causes of insanity, so that he may know the risks that he runs; (ii) to let him know in advance of the problems which lie before him, so that when they arise he will not be wholly unprepared to deal with them; (iii) to outline for him some general principles of mental hygiene and to quote to him a few maxims that may have for him some application and appeal; (iv) lastly, to tell him some of the danger signals, some

of the symptoms of incipient mental disease, so that he may recognize them when and if they come, and may take steps accordingly.

Certain Aspects of Ætiology.

I do not wish in the present lecture to traverse the whole vast subject of the ætiology of insanity, with its endless ramifications into the fields of heredity, pathology, sociology, ethics, education and religion; and, of course, I could not do so if I wished, so I will make no attempt to deal with it either systematically or comprehensively, but rather try to pick out those aspects of causation which are likely to be of special interest to the supposed hereditarily burdened individual whom I desire to help.

It might be thought that a pathologist, constantly engaged in making *post mortem* examinations on persons dying insane, would have something specially illuminating to say about the causation of insanity, but I am sorry to say that this is far from being the case. If one passes in review the morbid changes found in cases of mental disease, one finds that the brain is liable to be damaged by infections, arterial disease and tumour growth in the same way as other organs, and lesions due to these agencies do in fact account for a considerable proportion of cases of mental disease found in a mental hospital.

In another group the primary change is in the neurones, and whilst this is often obviously the result of the action of poisons or toxins, the source and nature of these are in many cases obscure.

In still another group of cases, often spoken of as functional, no structural changes to explain the symptoms satisfactorily can be found and their causation is really unknown. In this group are included the psychoneuroses and some of the most important forms of insanity.

With regard to the causation of insanity, there are at the present time two main conceptions.

The first is the psychological, in which the malady is attributed to mental stress or emotional disturbance. The psychological conception, in the words of Dr. Bernard Hart, is based on the view that mental processes can be directly studied without any reference to the accompanying changes which are presumed to take place in the brain, and that insanity may therefore be attacked from the standpoint of psychology. This standpoint seems to me reasonable enough, and I have no quarrel with it. It is true that a current of electricity, once it is produced, obeys laws applicable to electric currents and these laws can be studied without any reference to the dynamo which produced the current; but I feel sure that a physicist would have the greatest difficulty in accounting for all the vagaries of an electric current if he had no knowledge at all of the dynamo and the disorders to which it is liable. There would inevitably be something unconvincing, something far-fetched, something unreal about the explanations that he would have to offer.

The second is the materialistic or physiological conception which assigns the cause of the malady to some physical factor, such as a poison introduced from without or developed within the body, or to some definite lesion of the brain, such as softening or inflammation. The physiological conception is based on the assumption that all mental processes are accompanied by corresponding changes in the brain and its adherents aim at finding the actual changes in the brain which occur in insanity and it correlating the brain changes with each morbid mental process.

The dispassionate and impartial student must wonder if there need necessarily be such a divergence between the physiological and the psychological theories of disease, whether the two conceptions might not be reconciled. Facts of observation must be accepted whether they are physiological facts or psychological facts.

In the words of the late Dr. Bedford Pierce, "the trouble seems to be that we are dealing with the old eternal problem of mind and matter and we are no nearer its solution than the ancient Greeks. The mind does not seem able to project itself outside itself or to express any clear conception as to its own nature and its relation to the brain. A new philosophy may show us that mind and body are merely two aspects or two functions of the same thing and that the sharp distinction we are accustomed to draw between them is merely a consequence of our human disabilities."

However this may be, one must be content as a practical psychiatrist to note the fact that body and mind are constantly reacting the one on the other.

In my opinion any consideration of the causation of insanity should be based on the proposition that a person with an absolutely sound brain cannot be driven mad by purely mental stresses, however severe. In such a person, in the words of Clouston, "no grief, no sorrow, no affliction will have the effect of producing that kind of unsoundness of mind which we call insanity. He can be depressed, but it will be a sane melancholy, not an insane melancholia. He may become elevated in action and feeling, but it will be a sane joy, a sane exaltation and not mania. His power of willing may be interfered with so that for the time being his mental activities may be paralysed and weakened, but it is a sane lethargy and not a dementia."

Clouston goes on to say that "nature provides that a sound brain can feel only up to a certain point; beyond that, even if the cause is still continued, it ceases to feel pain, mental and bodily, and so takes no harm. Had this not been so, the world would not have lasted as it has done, and history would have had to record more individual and national collapses. When Rome was sacked by the Vandals, when Leyden was besieged by the Spaniards, there would scarcely have remained a sane man or woman, if mental and bodily stresses alone had had the power to deprive men and women of their essential soundness of mind." The same thought was in the mind of the late Sir Frederick Mott when he once told me that during the retreat from Serbia in the

recent world war, when men, women and children were subjected to every conceivable stress and hardship, there had been no appreciable increase in the incidence of insanity. "I do not say", remarks Clouston, "that men and women may not be altered in mind, deadened in their feelings, lessened in their power of action, lowered in their intellectual capacities and may not even be killed by such stresses, but 'mad' in the technical sense of the term they cannot become from these causes. It is only when there are flaws in the brain constitution by original inheritance or from other causes that mental stresses have the power of inducing unsoundness of mind."

To these sentiments so admirably expressed by Clouston I would add that every member of my audience can rest assured that unless he or she has inherited the potentiality of developing such diseases, no repressed desires, no infantile modes of thought, no thwarted instincts or distressing experiences in early life, however disturbing they may be to the functioning of the mind, will cause him or her to suffer from *dementia præcox*, or manic depressive insanity or psychasthenia or hysteria.

The causes of insanity may be conveniently divided into predisposing causes and exciting causes.

Exciting Causes.

Somewhat illogically I propose to deal with the exciting causes first, and of these to consider in most detail mental stresses. Any brain may be damaged by such direct stresses as:

(1) Poisoning by alcohol, morphine or cocaine, or by the toxins of acute infective diseases, such as puerperal fever, influenza, typhoid fever, malaria and pneumonia.

(2) Infection by the germs of syphilis.

(3) Degeneration of the cerebral arteries rendering them incapable of furnishing an adequate supply of blood to the brain, or liable to burst, causing hæmorrhage into the brain, or to become blocked by blood clot, giving rise to areas of softening.

(4) Inflammation of the brain itself or of its membranes.

(5) Tumours.

(6) Injuries resulting from gunshot wounds or fractures of the skull.

The functioning of the brain may also be disturbed by diseases in other non-nervous organs; for example, the kidneys resulting in uræmia, the pancreas causing diabetes or the endocrine glands giving rise to such maladies as myxœdema and hyperthyreoidism. All of these conditions may be associated with striking mental changes. Anything too that causes malnutrition of the body as a whole will prejudicially affect the well-being of the brain.

Just as it requires steady drinking over a period of years rather than an isolated drinking bout to bring about the conditions necessary for the development of *delirium tremens*, and just as it requires some long continued irritation rather than a single injury to determine the onset of cancer, so it is long continued mental stresses rather than sudden shocks which are effective in producing a mental breakdown.

The kind of mental stress, too, is as important as its duration. It is universally conceded that it is not mental work that is hurtful, but worry. Ordinary worry may be defined as a state of undue solicitude, a tendency to meet troubles half way; and undoubtedly it is harmful, but it is not nearly so detrimental as that special form of worry called mental conflict. One experiences mental conflict in a minor degree whenever one has to make an important decision, for example, when one is called upon to decide whether one should apply for a higher post or be content to remain in one's existing position. One has to deal with incompatible aims and contending motives; one is pulled in one direction by thoughts, let us say, of the better salary, the higher status and many other advantages of the new post, and one is pulled in the opposite direction by fear that one may be unequal to the new task, by reluctance to give up the comfort, ease and security of one's present position. There is no form of mental activity so exhausting as the making of decisions.

Mental conflict becomes more serious and more severe when moral considerations are involved, when one is impelled by a powerful instinct or desire towards a course of action which is opposed to all one's moral sentiments, to all one's principles and one's standards of conduct. An unbearable emotional tension is set up with its accompanying indecision and paralysis of action.

But as Dr. Bernard Hart says, it is a biological necessity that some solution of the difficulty, some way out of the impasse should be found. The best solution is to obey the fundamental rule of mental hygiene, that one must face facts and recognize that one cannot have one's cake and eat it, a homely saying which to my mind sums up the whole of philosophy, that one cannot gratify one's desire and retain one's peace of mind and self-respect at the same time, that of the two ends one must be abandoned in favour of the other.

Another solution is to pretend that the offending desire does not exist and to repress it from consciousness. To give a trite example, if a man is in love with some other man's wife, a state of affairs that he feels to be wrong, he may pretend to himself that he is not in love with her, and repress the idea from his conscious mind, but if he continues to see her, the desire for her is kept alive and is perpetually stimulated anew and the conflict continues subconsciously and is still distressing and exhausting to him. Such a solution, which is known as repression, stands in sharp contrast to conscious renunciation in which the man clearly recognizes the state of affairs and decides definitely to give the woman up and not to see her at all.

Often one finds that persons who develop a mental breakdown have been for long engaged in some un-

lawful activity, or in some secret evil course of conduct, the discovery of which would be disastrous, and I agree with the psychoanalysts when they say that in every worry which is really effective in producing a mental breakdown there is always an element of self-reproach.

The chief difficulties in life arise in connexion with social relationships, and after mental conflict the most damaging mental stresses are those due to social friction in some form; it may be failure in conjugal adaptation, or incompatibility of temper between father and children, or between brothers and sisters, or it may be the necessity to work with or under some person who is antagonistic and whom one hates. Lastly, the mental stresses due to poverty with its attendant anxieties and constant harassing struggle to make both ends meet are very injurious.

Predisposing Causes.

Inferiority of inborn disposition is mainly referable to two great groups of causes: hereditary degeneracy and germinal injuries. It would not be profitable in the present lecture to discuss at any length the conflicting theories of the exact manner in which different qualities are hereditarily transmitted. Weismann states that acquired characters cannot be transmitted in any circumstances and elaborates a theory that the germ plasm is independent of the body plasm, that the body develops and dies in each generation, but the germ plasm goes on, and is the continuous stream of living substance that connects each generation with the next. The body nourishes, protects and carries the germ plasm, and is, in the words of Conklin, the mortal trustee of an immortal substance. According to this theory only spontaneous mutations can be inherited. Darwin and the neo-Lamarkians hold the much more stimulating and, to my mind, far more reasonable view that acquired qualities can be transmitted, that new characters may arise as the direct reaction of living creatures to their environment and that these characters may be inherited. I will content myself with the definition of heredity as the tendency of like to produce like.

What the supposed hereditarily burdened individual, to whom my remarks are in the main addressed, wants to know is what forms of mental disease are hereditary and whether anything can be done to change or eradicate evil heredity and its effects.

Before going on to discuss these points, I should like to combat the view, which is still widely held by psychiatrists, that when one is said to have a bad mental heredity, what one inherits is not a tendency to some particular mental disease, but a psychopathic constitution, a general nervous instability, an abnormal vulnerability of the neurones which may manifest itself in all sorts of ways, that hereditarily the different mental diseases are interchangeable. This conception of a similar predisposition for all mental diseases seems to me on *a priori* grounds most unreasonable, and it is not supported by my own experience. I would say, on the contrary, that in general the different forms of mental disease tend to breed true, that manic depressive insanity gives rise to manic depressive insanity and not to *dementia præcox*. I believe that the idea that manic depressive insanity can sometimes give rise to *dementia præcox* is due to the very serious difficulty one occasionally experiences in differentiating between the two diseases when one has only a cross section of the disease process to guide one. I believe, too, that *dementia præcox* always gives rise to *dementia præcox* and not to genuine epilepsy or imbecility. There is a tendency for mental diseases to antedate, as the late Sir Frederick Mott put it, that is to occur at an earlier age and in a more severe form in successive generations. With regard to *dementia præcox*, it is my opinion that many cases of involutional psychosis and senile dementia, as distinct from arteriosclerotic dementia, are really examples of *dementia præcox* occurring in old age. A man who ultimately develops senile dementia may have a son who will exhibit a frank *dementia præcox* at, say, twenty-five years of age; and if he in his turn has children, then in some of them *dementia præcox* is likely to arise in early childhood, causing an arrest of mental development which is apt to be mistaken for imbecility.

When, of course, there is a double mental heredity in which the father tends to inherit one form of mental disease and the mother another, one is faced with a pretty problem in attempting to forecast the forms of mental disease which will arise amongst their progeny. The Mendelian laws will form the best but in the circumstances an unreliable guide. But my real reason for bringing up the question of polymorphism, namely, what I believe to be the fallacious theory that there is a unitary something in the psychopathic inheritance which may manifest itself in all manner of different nervous and mental diseases, is to prevent anyone from worrying himself unnecessarily from believing that he has a bad mental heredity, because he has a cousin who developed epilepsy following a fracture of the skull, or because his uncle suffered from a stroke or was a martyr to asthma or gout, or was a victim of migraine, or because he has a brother who is a Mongolian imbecile or a sister who is mentally defective as a result of some injury to the growing germ or infective disease of the brain in early life.

The conditions that are most likely to be inherited are *dementia præcox*, manic depressive insanity, certain forms of mental deficiency, certain forms of epilepsy, certain forms of constitutional psychopathic inferiority, under which heading are comprised those numerous people who belong to the borderland between mental health and mental illness, who show no marked disturbances, such as hallucinations or delusions, but who deviate from the average on account of some inadequacy of mental endowment. They are sometimes called psychopathic personalities, and show their defectiveness mainly in their lack of wisdom and self-control and in weakness of will. They include the abnormally excitable, the unstable, the impulsive, the

pathologically contentious, the pathological liars and swindlers, the antisocial and the criminals.

It is the modern tendency to seek for the predisposing causes of insanity in blastophoria or germinal injuries rather than in hereditary degeneracy in the strict sense of the term.

According to the blastophoric theory, the germ plasm of an individual can be so altered and injured by environmental influences as to alter and injure his descendants for several generations. These germinal injuries are likely to express themselves not so much in particular morbid dispositions, but in a general inferiority of the growing creature. Of the agencies which can produce germinal injuries, alcohol and syphilis are specially important. We know also that all general injuries to the body, so far as they affect the sex glands, can exert an unfavourable influence upon the new germ.

Many cases of arrest of mental and physical development may be explained as the result of germinal injuries, or damage, not to the sex glands, but to the growing germ in the early stages of its development.

As influences which tend to lower the general vitality of the organism and therefore of the germ cells, we have to take into account all the enormously important social causes of insanity: poverty with its attendant malnutrition and exhausting struggle for existence, and the drift from the country into the crowded cities with their moral temptations and increased risk of venereal disease, with the inducements which they offer to people to live feverish overfilled lives, and to indulge in alcohol and drugs and the lack of opportunity which they afford for free movement in the open air.

Because one admits the overwhelming importance of heredity as a predisposing factor in the causation of insanity, it does not follow that one should adopt a fatalistic attitude and fold one's arms. I believe that much can be done to antagonize the effects of a bad heredity and that many a person, if he could have been given just the right environment and the right kind of education, might have been able to avoid technical insanity.

I will conclude my remarks on heredity in its relation to mental diseases by quoting the inspiring words of Myerson:

> Are the transmittable mental diseases really hereditary characters, in the sense that stature and blue eyes are hereditary characters, or do they merely represent diseases caused by unknown agents whose effects persist over two or more generations and from which a stock may either die or recover. For if a true heredity is involved, then our humanitarian efforts are dysgenic, cacogenic, *i.e.*, injurious to the race. Hygiene, which has as its aim the preservation of the individual, is bad for the stock, so the eugenists believe and indict the noblest efforts of our civilization, but suppose they are wrong that the race is injured by adverse environmental conditions, and that such injury may persist for generations; then our social efforts are racial efforts and our noblest strivings have a eugenical backing.

Finally, one may review the causes of insanity from the point of view of the dangers incidental to each period of life. In early childhood the chief risk is from invasion by infective organisms. In adolescence and during the work of reproduction an important part is played in pathogenesis by internal revolutions in the bodily economy. Later the injuries resulting from accident and disease predominate until the climacteric and presenile periods, when endocrine changes connected with fading of sex desire become an important cause of mental instability. In the end, age itself becomes a disease.

There is a certain difference in the stresses to which the two sexes are liable. Men are apt to be damaged chiefly by alcohol, by syphilis, by head injuries, by morphine or cocaine, by the wearing effects of a hard struggle for existence interfering with sleep and nutrition and exhausting the bodily strength. Women are chiefly imperilled by the emotional shocks incidental to love, by the physical and mental demands of child-bearing, with its frequent concomitant septic infection, by overwork and worry connected with the care of home and children, by conjugal unhappiness or by thwarted sexual instincts, and an aimless, unsatisfying, dependent existence.

The causes of any individual mental breakdown are nearly always multiple. There is usually a predisposing cause in the shape of a bad heredity, an exciting cause, such as prolonged mental stress or chronic toxæmia, for example, from septic teeth or sinusitis, and a final determining cause, such as an emotional shock, an injury or an acute infection.

Often the causes suggested for a mental breakdown are to be more correctly interpreted as the early symptoms of disease. The overwork has been necessitated by a mental inefficiency already existing. The worry has been an indication of a lowering of psychological tension, a symptom of mental exhaustion rather than a cause. Disappointment in love is often the inevitable result of a change in disposition on the part of the patient. Domestic disharmony has been produced by the patient's own abnormal behaviour. Excessive drinking is frequently a sign of commencing illness rather than a cause. Sometimes a mental disease seems to develop insidiously and relentlessly from purely internal causes which affect the functioning of the brain, and no contributing external stresses can be assigned.

The Question of Marriage.

With regard to the question of marriage the person who believes that he has insanity in his family should of course consult a psychiatrist and place all the facts frankly before him. To conceal or minimize the facts is foolish in the extreme, and yet how many times have I been told that there was no insanity in the family when I could see the evidence with my own eyes, and knew that the statement could not be otherwise than untrue. The psychiatrist must know the facts in regard to one's self, and he must also know the facts in regard to the person one proposes to marry. One may take risks with a one-sided heredity that one cannot take when both individuals concerned are hereditarily burdened. The psychiatrist will endeavour to

estimate the importance of the hereditary facts disclosed to him, and he will need all his knowledge of mental diseases to enable him to arrive at a wise decision. Some of the facts will be negligible, some serious, some decisive.

The most extreme and absurd views often exist as to what constitutes a psychopathic inheritance. If an ill-defined nervousness is to be accepted as constituting a psychopathic taint, then none of us can escape and the fact that there are normal people at all should occasion surprise. In coming to a decision, full allowance should be made for our shocking ignorance on the subject of heredity. Advance in knowledge tends to narrow down the number of diseases which are regarded as hereditary. General paralysis of the insane we now know has one cause only and that is infection with the germs of syphilis, but in Maudsley's "Physiology and Pathology of Mind", which in its day represented the last word of psychiatric wisdom, we see it stated:

> General paralysis is a disease which is usually the result of continued excesses of some sort or other, but it may unquestionably occur without any marked excess, and when it does so there will mostly be discoverable an hereditary taint in the individual.

If there is a doubt, the patient should be given the benefit of it. All the ordinary considerations which influence one in the choice of a life partner will, of course, hold true in the case of the mentally unstable with more than ordinary force. Considerations of wealth and social position must give way to the more vital considerations of health of body and health of mind. A person who is mentally unstable should naturally choose a partner conspicuous for his or her soundness of judgement and strength of will, but unfortunately there is a tendency for like to attract like, and neurotic persons are apt to seek other neurotic persons in marriage. While it is true that one cannot obtain anything in this world worth having without risk and while I would advise anyone where the risk was slight to take it, I remember the words of a mother who once consulted me as to the outlook for her son who was suffering from *dementia præcox*. When I had to tell her that unless some new form of treatment were discovered, he would not recover, she said to me: "Doctor, unless the same misfortune should happen to yourself, you will never know what it is like to have a son who is mad."

I am discouraged from pursuing the question of marriage any further, because my experience teaches me that the discussion is largely academic, that when people really want to get married they will do so whatever the psychiatrist may say.

> I recall a young man and young woman who once came to see me to ask if they should get married as there was epilepsy in the young man's family, and after I had asked them a few pertinent questions, the young woman said: "Fred, it's no good our worrying the doctor, we ought to tell him that we got married three weeks ago."

The Problem of the Sex Urge.

And if he decides that he should not get married, what shall he do, when he feels the full impact of sex desire, when in the words of Hardy, in his preface to "Jude the Obscure", he comes up against "the fret and fever, derision and disaster that may press in the wake of the strongest passion known to humanity and the tragedy of unfilled aims"? On the way that he deals with this central problem will depend in large measure his success or failure in the self-prevention of insanity.

It is cruel that the mentally unstable whose will is often weak and whose judgement is often clouded, should be called upon to withstand stresses and to deal with problems that would tax the strength of the strongest and most resolute, but they have to do it and there it is. He should not adopt towards sex an attitude of sour grapes and say that he cannot bear the sight of women, that they do not interest him and that he does not want to have anything to do with them. In other words, he should not attempt to repress sex, for he will not be able to if he tries, and the repressed sexual emotions will tend to find expression in neurotic symptoms, in auto-erotism and in other undesirable ways; besides, sex repression as distinct from sex sublimation tends to modify character, to stunt and dwarf the development of the emotional side of one's nature, and generally to embitter and sour the personality.

The best thing he can do is to hold fast to the cardinal rule of mental hygiene, that one must face facts. He should acknowledge to himself that, however unfortunate it may be, he is biologically unfit, namely, unfit to reproduce his kind, and that of necessity he must renounce the joys of sex. He should frankly admit that he has the same desires as other people, but that in the circumstances they cannot find normal expression. The energy of the sexual instinct must be sublimated or diverted from its original aim and redirected so that it can be utilized for other creative activities. The same thing has been said by Weatherhead in perhaps simpler language, and it may be worth while to reproduce his words with but slight modification. "Sublimation", he says, "does not mean to make higher but rather to redirect. Imagine the instinct of sex as a stream flowing in a certain channel with great power to achieve a certain result, that result being of course ultimately the carrying on of the race. If because of certain facts, such as an hereditary tendency towards insanity, this becomes impossible, we must not try to dam up the current, for it will break out somewhere, possibly in unpleasant ways, in unpleasant dreams, lustful imaginings, morbid curiosities, neurotic tendencies and nervous breakdowns; nor must we debase its purpose into unnatural channels, a proceeding which leads to perversion, but sublimate it; that is, direct it into another channel, where it can do another piece of work which is of service to the community and satisfactory to the self." Even when he has made a conscious renunciation of sex experience, he will have no conception of the difficulties and dangers which lie in his path. Self-control is acquired only by constant reflection.

Sublimation, as Weatherhead says, is a second best to the biological way of using sex energy, and complete sublimation is a discipline which may take years to accomplish and, except in people of exceptionally high character, it is not easy to make the sublimation so complete as to use up all the instinctive energy which needs directing; at the same time, he adds, it is the only way which can produce happiness and save from nervous breakdown and is God's message to the unmarried.

His inherited defect will cut him off to a large extent from friendships with women. Women, who can be such a comfort, a help and a solace to men, are a danger to the biologically unfit.

When I recall the tragedies of unfilled aims that I have met with in my psychiatric experience, I am reminded of the words of Esdras written over 100 years B.C.:

> Yea, many there be that have run out of their wits for women, and become servants for their sakes. Many also have perished, have erred and sinned for women. Oh, ye men, how can it be but that women should be strong, seeing they do this.

There are those who cannot make the renunciation and who find the thought that they are missing something in life intolerable, and the question arises: should they seek sex experience outside of marriage. This is a problem that each person must decide for himself. The worst decision is to make no decision at all, for in that case the individual will find his whole strength used up in a futile preoccupation with sex and he will get nowhere and achieve nothing in life.

If he decides that he must have sexual experience at any cost, I would urge him to minimize the risks as far as possible and take them once only, for nothing can be more certain that if he continues to take them he will end in ruin. He must remember that everything has to be paid for, and it is unreasonable to expect to have sexual adventures and peace of mind at the same time, and that a person who is normal can take risks and do many things with impunity that for a person who is mentally unstable and biologically unfit must for ever remain taboo.

If I were asked whether continence is prejudicial to body and mind, I should say that to some it is and that to others it is not. In many it is apt to cause restlessness and irritability and morbid self-feeling, but it is less likely in my opinion to contribute to a mental breakdown than the ruinous mental stresses that may follow in the train of irregular sexual relationships.

But is all this renunciation, this self-sacrifice, this fret and fever absolutely necessary? Is there no alternative whatsoever? I should be inclined to say that there was an alternative and that alternative is birth control or surgical sterilization.

People who are likely to transmit an hereditary disease have no right to marry if their marriage involves bringing into the world children who will have to pay the price in lifelong suffering, but if they can marry and at the same time make the advent of children impossible or at least highly improbable, there does not seem any sufficient or all-compelling reason why they should not do so. The sex instinct is, of course, in the nature of a progression and ideally should proceed from courtship to marriage and parenthood in an unbroken advance, and for mental harmony and well-being its working should not be interrupted at any stage. But we are dealing all the time with second bests. For those who are not able to make the sublimation previously indicated, it is surely more conducive to mental health and happiness that they should marry, even with the necessity of foregoing parenthood than that they should seek satisfaction for their instincts outside of marriage with the mental conflicts that must inevitably arise. I feel sure that with the improvement in birth control methods which is bound to eventuate, people will in increasing numbers avail themselves of this alternative to complete sublimation.

It is not an alternative that one would recommend indiscriminately to all who happen to be mentally unstable and who wish to marry. Every case would have to be decided on its own merits, and in trying to offer advice the psychiatrist would be guided more by his experience of life and his knowledge of men and women than by any technical knowledge of mental diseases. In the case of those whose religion forbids the use of contraceptive devices, it is not a solution to be advised because of the mental conflicts that might arise.

Finally, for those who have reached the climacteric or for those in whom the tide of sex desire is on the ebb, I should in certain cases have no hesitation in recommending marriage in which sex would be by mutual consent largely eliminated. For, after all, the sexual element in marriage does not constitute the whole of marriage by any means. There are still companionship, interests shared in common, and mutual help, and all of these things are as valuable to the mentally unstable as to others, if not more valuable.

To sum up our long discussion one can say that there is no satisfactory solution of the problem of biological unfitness, but it can be dealt with in several ways: (i) By sex repression, which is a bad solution; (ii) by sex expression in a way that is socially undesirable and morally wrong; (iii) by sex sublimation, which is the best solution and one which is in harmony with the fundamental rule of mental hygiene that one must face facts; (iv) by marriage in which the procreation of children is prevented either by means of birth control or by sexual abstinence, and in selected cases this solution is one to be seriously considered.

The Problem of Masturbation.

Next and inevitably we come to the problem of autoerotism or masturbation. The term masturbation signifies the touching or handling of the genital apparatus in order to evoke pleasure or to satisfy sexual desire. I turn to the consideration of the problem wearily and unwillingly; but if I were to fail to refer to it or to treat it lightly, it would mean that I was heedless of the innumerable

patients who have attributed their mental illness to the effects of masturbation in youth, that I was indifferent to the countless patients who have suffered agonies of shame and self-reproach, who have tormented themselves with the idea of having committed the unpardonable sin, or who have worked themselves up into a perfect frenzy of despair because of their inability to free themselves from their enslaving habit; it would mean that I had forgotten patients who have plunged their hands into boiling water and who have mutilated themselves in serious ways as a self-punishment or as an atonement for their imagined sin. It all seems so sad and unnecessary, such a storm in a teacup, but of course they were mentally ill. Masturbation is never a cause of insanity, but always a symptom either of maladjustment to sex or of mental disease, especially of *dementia præcox*.

A youth healthily constituted in body and mind does not tend to come under its influence to any harmful extent or for any length of time. As he grows older and his judgement and will power become stronger, the practice is in the great majority of cases given up and forgotten.

If the practice is carried to excess and if it is continued into adult life, then it means that the person has failed to develop normally or that he is afraid of the responsibilities of marriage or of the consequences of illicit sexual intercourse or afraid of both; and if he is mentally unstable and biological unfit, he has reason to be afraid and need not blame himself on that account.

To say in the psychoanalytical jargon that such a person is retreating from reality or that he is regressing to the narcissistic stage in psychosexual development, seems to me rather hard on him, for burdened with an organic inferiority, he has ample justification for retreat both from marriage and from illicit sexual intercourse. If a person becomes a veritable slave to masturbation as to a drug habit, it means that he is very definitely mentally ill, that there must be some lowering of psychological tension, some clouding of judgement and weakening of the will to make such a state of affairs possible. In the case of masturbation as practised by normal people for the relief of sexual tension and because normal gratification is for some reason unobtainable, we are dealing with a different and infinitely less serious problem. The question arises as to whether masturbation is harmful or otherwise. I would say that in the case of the normal, provided that they do not carry the practice to excess and do not worry about it, it does little harm. With the mentally unstable, things are different and for them masturbation is undoubtedly hurtful.

It is dangerous because it is so easy and because unduly frequent repetition is so likely. It is enervating because no effort is required for its performance, it saps the will and weakens the character. It is harmful because of the mental depression resulting from the feelings of guilt, shame, self-reproach and inferiority associated with its practice, and because of the fear (unfounded it is true) that all sorts of pathological conditions will result from it.

As a reaction to the ludicrous views of our fathers and grandfathers that masturbation was not only a terrible sin, but that it had dreadful physical and mental consequences as well, including insanity, many present day neurologists have swung to the opposite extreme and say that masturbation is not harmful at all. The truth lies between the two extremes. Masturbation, even when carried to excess, does not produce insanity or any definite pathological condition, but it is certainly exhausting to the nervous system and damaging to the general health.

Time will not permit me to discuss the treatment of masturbation in any detail, but one or two points may be touched upon. As always in psychotherapy, one should have regard to the two dominant principles that one should teach the patient to know himself and to face facts. He should be made to realize the reasons for his behaviour. He should be taught that it is not sinful to have sexual desires, that it is how one deals with these desires that matters. He should be told that the practice is so common that probably almost all men and the majority of women at some time or other have had experience of it.

Just as in the treatment of a drug habit, it is essential that the patient should have the desire to get well, and that the renunciation should be definitely made. In many cases the patient has no real wish to be cured. The attack on masturbation should be indirect. There should be no terrific efforts of will, no struggle for one's soul's salvation or anything of that kind. The morbid impulse must be gradually replaced by healthy impulses. Everything possible should be done to improve his bodily health and to raise his morale. Hard work in the open air will probably be more helpful than any other individual measure. I regret having had to devote so much time to this problem, but it is clear that one is not going to make any progress along the road leading to mental health if one is going to dissipate one's energies and worry oneself ill in a struggle with such a habit as masturbation.

The Choice of Occupation.

The question arises as to what is the most suitable occupation for one burdened with an hereditary tendency towards insanity.

Because a person happens to have a bad mental heredity it does not follow that all the ordinary considerations that influence one in the choice of an occupation, such as health, physique, special aptitudes, special opportunities or special leanings, should be disregarded. In general, it may be said that the occupation that is most congenial is the best whatever that may happen to be. An outdoor occupation in which the work will be mainly physical rather than mental and which incidentally secures conditions favourable to the attainment of good bodily health is obviously desirable. So the seeker after advice is usually told to go on the

land, but if he has not the slightest interest in agriculture, nor taste for hard bodily work, it is not likely that he will be either happy or successful as a farmer.

Regard should be had to special risks and temptations; thus a man with a family history of alcoholism would naturally avoid keeping a hotel or becoming a commercial traveller. A person who can stand but little strain would certainly be foolish to become a stock broker with the anxieties that go with such a profession. As Maudsley says: "Whether a particular trade or profession favours the production of insanity is generally a question of the habits incidental to its pursuit, whether those who follow it live soberly or temperately or whether they are addicted to intemperance and riotous living." Mental work is not necessarily injurious to the neurotic and may be positively beneficial.

An occupation, such as an actor's, where the work is irregular with frequent periods of unemployment, is undesirable. The more the work is monotonous, routine and regular, provided always that it is congenial, the more suitable it will be. Psychasthenics might do worse than enter some branch of the public service, where the work is regular and routine, where there is security of tenure, where their lives are regulated by superiors and they have no responsibilities, where no dangerous initiative is asked or expected of them, and where they have few decisions to make.

A great many mentally unstable people, when the question comes up of applying for a new post, make themselves ill with worry as to their fitness for the position, whether it will prove too great a strain for them, whether it would be better and safer to stay where they are. In general, I would advise them to try for the higher post, first because no one and nothing can resist change; a post which is desirable under existing conditions may become much less attractive with the changes that inevitably come with time. Secondly, because continued want of success in life has a very injurious effect on a man's health of body and mind. To feel that while his contemporaries are getting on he remains stationary or retrogresses, is in many cases more detrimental to his mental health than the extra strain incidental to the higher position. Success, on the other hand, is the most powerful mental tonic in the world and raises a person's positive self feeling enormously.

In contrast to the anxious hesitancy with which so many people approach the question of taking a new position, I might mention the attitude of a former colleague of mine who one day startled me by saying that he had put in an application for the position of medical superintendent of a large mental hospital of about 2,000 beds. As I thought he had neither the knowledge nor the personal qualities for such a position, I suggested mildly that it was doubtful whether he had had sufficient experience. He rebuked me by saying: "It is for the committee to determine my fitness for the job; I'm certainly not going to worry about it."

I will close this section with a quotation from William James:

> Let no youth have any anxiety about the upshot of his education, whatever the line of it may be. If he keeps faithfully busy each hour of the working day, he may safely leave the final result to itself. He can with perfect certainty count on waking up some fine morning to find himself one of the competent ones of his generation in whatever pursuit he may have singled out. Silently, between all the details of his business, the power of judging in all the class of matter will have built itself up within him as a possession that will never pass away. Young people should know of this in advance. The ignorance of it has probably engendered more discouragement and faint heartedness in youths embarking on arduous careers than all other causes put together.

The Importance of Conforming to the Herd.

Man is a gregarious animal and cannot live satisfactorily or even safely alone. To be happy he must conform to the demands of the herd instinct, whose impulse finds expression in the desire, not only for the physical proximity of other human beings and for social intercourse with them, but also for sharing their emotions with other men. In the words of McDougal, the herd instinct "prompts us to desire to be in emotional harmony with those about us and it renders us uneasy and dissatisfied so long as we feel that in any matter our emotional attitude is widely different from that of our group or social circle. In matters in which society at large, including all the minor groups or circles of which we are members, expresses unmistakably a common emotional attitude, as in the fundamentals of common morality, this desire to be at one with our fellows works in fullest strength; and if we find ourselves out of harmony with such general emotional attitudes we cannot avoid enduring uneasiness".

One of the chief aims of mental hygiene is the avoidance of mental conflict, and that is one of the reasons why we should endeavour not to be at variance with the herd. Anyone who is mentally unstable should identify himself with his group; he should join his union, whatever trade or profession he might adopt. Such a man should not attempt to lead a life which is opposed to the dictates of conventional morality. In general, he should avoid conduct that is eccentric or peculiar and endeavour to be as ordinary and commonplace as possible. He should realize the profound truth of Goethe's saying that "nothing brings us nearer to madness than when we distinguish ourselves from others, nothing so much preserves the common understanding as living in sympathy with many men". He should not be forever demanding his rights, for a right only means that the holder of the right can demand of another or of others the performance of certain actions without having to make any return himself in the way of action. He should rather concern himself about his duties, about the actions which he himself should perform for others. It will be seen that the tendenecy of the proletariat at the present time to be constantly demanding their

rights, namely, to have things given to them or done for them without doing anything in return, is a serious sign of mental ill health and moral degeneracy in the community. It is acknowledged that social activities are amongst the most exhausting of all activities; nevertheless a person who finds himself tending more and more to withdraw from society should realize that he is not on the road to mental health and should retrace his steps.

The hypersensitive individual should realize that others make mistakes, that others are censured and others ridiculed; for him to seek immunity for himself is to be abnormal and unreasonable. Those who are liable to be upset by unfavourable comment may take to heart the advice of Epictetus when he says: "If anyone tells you that such a person speaks ill of you, do not make excuses about what is said of you, but answer: 'He was ignorant of my other faults or he would not have mentioned these alone'."

The Importance of Habit.

There is nothing more important in mental hygiene than the acquisition of good habits, habits of body and habits of mind. I would recommend everyone to read the chapter on habit in James's "Principles of Psychology", as it is one of the most practically helpful psychological studies that I know of. From it I propose to abstract for you a few passages that seem to me to have a special bearing on the self-prevention of insanity.

Habit simplifies the movements required to achieve a given result, makes them more accurate, and diminishes fatigue. As Maudsley says: "If an act became no easier after being done several times, if the careful direction of consciousness were necessary to its accomplishment on each occasion, it is evident that the whole activity of a lifetime might be confined to one or two deeds, that no progress could take place in development, a man might be occupied all day in dressing and undressing himself; the attitude of his body would absorb all his attention and energy; the washing of his hands and the fastening of a button would be as difficult for him on each occasion as to a child on its first trial." Habit diminishes the conscious attention with which our acts are performed. The great thing in all education is to make our nervous system our ally instead of our enemy. For this we must make automatic and habitual as early as possible, as many useful actions as we can, and guard against the growing into ways that are likely to be disadvantageous to us, as we should against the plague.

The more of the details of our daily life we can hand over to the effortless custody of automatism, the more our higher powers of mind will be set free for their own proper work. There is no more miserable human being than one in whom nothing is habitual but indecision and for whom the time of rising and going to bed every day and the beginning of every bit of work are subjects of express volitional deliberation. Full half the time of such a man goes to the deciding or regretting of matters which ought to be so ingrained in him as practically not to exist for his consciousness at all. As a practical maxim, seize the first possible opportunity to act on every resolution you make, and on every emotional prompting you may experience in the direction of habits to which you aspire. It is not in the moment of their forming, but in the moment of their producing motor effects that resolves and aspirations communicate the new set to the brain. No matter how full a reservoir of maxims one may possess, and no matter how good one's sentiments may be, if one has not taken advantage of every concrete opportunity to act, one's character may remain entirely unaffected.

Keep the faculty of effort alive in you by a little gratuitous exercise every day. Do every day or two something for no other reason than that you would rather not do it, so that when the hour of dire need draws nigh, it may find you not unnerved and untrained to stand the test. Asceticism of this sort is like the insurance that a man pays on his house or goods. The tax does him no good at the time and possibly may never bring him a return, but if the fire does come, his having paid it will be his salvation from ruin. So with a man who has daily inured himself to habits of concentrated attention and energetic volition and self-denial in unnecessary things. He will stand like a tower when everything rocks around him and when his softer fellows mortals are winnowed like chaff in the blast.

Character is related to habit and may be defined as the sum total of an individual's inborn and acquired tendencies to action. A man of strong character will tend to act in a resolute, prompt and decisive way whenever he is confronted by any of the emergencies of life, while a weak man will tend to be irresolute, indecisive and ineffectual in the same circumstances. I believe that while it is true that character determines conduct, it is equally true that conduct makes character. In the phrase of Carpenter, the nervous system grows to the modes in which it is exercised, or more generally function makes structure. The making of our character lies largely in our own hands.

Closely linked to habit is the question of morale. One of the first signs of mental illness is often the lowering of the patient's morale; he becomes indifferent to his personal appearance and careless of his dress, he goes to work unshaven and with his clothes unbrushed. He becomes slack and unpunctual and tends to let everything go. A person of high morale, on the contrary, is one who takes pains to keep his bodily and mental fitness at a maximum; whether he is feeling ill or well, tired or otherwise, he sees to it that he is always clean and tidy and neatly dressed. He is the kind of person who takes a cold shower every morning, followed by physical jerks. He takes exercise regularly in the fresh air not because he wants to, but because he knows that it is good for him and that it helps to keep him fit. The maintenance of a high morale is connected with the development of the will, and is of the first importance in mental hygiene.

The Importance of Good Bodily Health.

Whatever views one may hold about the relationship between body and mind, one cannot get away from the fact that every kind of mental activity is always and necessarily accompanied by corresponding brain activity. In this world at least where there is no brain there can be no mind. No one who has watched a case of general paralysis of the insane from the early stages through to the end and noted the gradual extinction of the mind proceeding *pari passu* with the destruction of the brain can have any doubts on that score.

All one's mental processes, the reliability of one's memory, the soundness of one's judgement, the strength of one's will are influenced by the health and vitality of the brain cells which condition them, and more generally by the health of body as a whole,

for we have come to realize that mind is a function of the entire organism, that in a sense one thinks with one's muscles as well as with one's brain, that one's mood may depend largely on the conditions of one's stomach and intestines, that one's emotions may be determined by the functioning of one's endocrine glands, that one's capacity for mental work and its quality may depend upon the efficiency of one's heart and the health and elasticity of one's arteries. The influence of the body on the mind can hardly be over-rated and one of the first principles of mental hygiene is to maintain the bodily health at a maximum. If the brain cells are being poisoned by alcohol or by the toxins of some infective disease, then no maxims however apposite, no sentiments however admirable, no moral discipline however thorough, will avail to prevent the development of unsoundness of mind. There can be no doubt that there is an inherited mental instability in the majority of those who develop psychoneuroses or psychoses, but lowered physical health, whether due, for example, to the after-effects of an attack of influenza or to the chronic poisoning of dental sepsis or sinusitis, is often the final determining cause of the breakdown. I would go further and say that in many cases, had the bodily health remained satisfactory, no serious mental disturbance would have occurred. Time will not permit me to make any specific suggestions with regard to the maintenance of good bodily health, although I realize that such suggestions would be very much to the point in a lecture on the self-prevention of insanity. An abundance of good food and a sufficiency of sleep are of paramount importance.

The Early Symptoms of Mental Disease.

Every mental disease has its own early manifestations and the only satisfactory way of describing the early symptoms of mental disease would be to take each disease in turn and give an account of its modes of onset, but in the present lecture this would be altogether impracticable. However, just as in lung diseases there are certain general symptoms such as cough, breathlessness, expectoration and sometimes hæmoptysis which make one think that the lungs are affected, so there are certain general symptoms which should direct one's attention to the possibility of incipient mental disease.

Even with regard to a consideration of these general symptoms I am faced with a serious difficulty, for I have to remember that I am dealing with the self-prevention of insanity, and therefore I must largely confine myself to subjective symptoms which can be noted by the patient himself, although it is the objective symptoms, that is, the symptoms which can be observed by other people, which are incomparably more important.

In insanity it is always the patient's conduct that we are really interested in, what he says, and what he does, rather than what he feels or thinks. The relatives, if they are observant, will notice all sorts of subtle but significant changes in his disposition and general behaviour of which the patient himself will be oblivious or only vaguely aware. So even if I do limit myself in the main to the discussion of subjective symptoms, I have little expectation that the patient will realize that he is ill, for lack of insight is the very essence of insanity.

At the outset of my remarks I think it necessary to warn my hearers not to exaggerate the importance of some of the symptoms which I shall describe. All of them indicate a state of mental ill-health and all of them may be real preludes to insanity, but just as every cough does not lead to pneumonia and death, so some of them may be merely passing mental disturbances, and some of them may remain stationary and never progress to certifiable mental disease. Each symptom should be considered in relation to other symptoms and to heredity, past history and temperament of the person concerned.

Many a mental disease in the beginning is mistaken for neurasthenia, and this is not to be wondered at, for neurasthenia is really a symptom of many diseases rather than a disease in itself.

I remember once, when I was a house physician at the National Hospital for Nervous Diseases in Queen Square, London, a man was sent in by one of the most expert neurologists in England with the diagnosis of neurasthenia. So great is the influence of authority that I, as a house physician, did not dream of subjecting the diagnosis to a critical review until one day I was urgently summoned to the ward and found the patient in a state of nudity, standing in a wash-hand basin in the centre of the floor, singing at the top of his voice and attempting to pour a jug of water over himself. Of course, such conduct removed him far from the category of neurasthenia. His blood was submitted for a Wassermann test and he was found to be suffering from general paralysis of the insane.

One of the early indications of mental disease may be then the development in a person who was previously not nervous, of symptoms suggestive of neurasthenia, a feeling of fatigue and exhaustion out of proportion to the amount of work done, a feeling of incapacity, physical, intellectual and moral, a feeling of timidity and lack of self-confidence and a tendency to discouragement and depression. I sincerely hope that no one among my listeners will think he is going mad simply because he may happen to be suffering from some of these symptoms, but no one should remain for long in a neurasthenic state without having his condition investigated, preferably by a psychiatrist in the first instance. At the back of his symptoms may be some bodily disease or, what is far more likely, he may be suffering from the effects of mental conflict or maladjustment.

Many a mental disease, too, makes its appearance in the deceptive guise of hysteria. A person who was previously not hysterical, may show a heightened emotional excitability, a tendency towards passionate outbursts and changes of mood, capriciousness, hypersensitiveness, emotional exuberance, unreasonable attachments and antipathies, impulsiveness, and sometimes an exasperating stubbornness.

Failure of the power to concentrate one's attention is one of the earliest symptoms of mental exhaustion. A student, let us say, who had previously

had no difficulty in following a lecture of an hour's duration, finds his mind constantly wandering, and in severe cases he may not be able to read anything, even an ordinary book, that requires the slightest continuous attention.

Another symptom of mental exhaustion is a feeling of an increased resistance in one's environment. To the patient it seems that the people with whom he has to work are less friendly, less cooperative, more difficult to deal with, more contrary than they used to be, and as the patient is likely to be at the same time hypersensitive, irritable, overanxious and overbearing, the increased resistance, which was at first imaginary, tends to become real.

Listlessness and disinclination for effort, a feeling of unaccountable laziness are all symptoms of mental exhaustion and may be regarded as purposive and representing an effort on the part of the organism to defend itself against any undue stress.

A person is ill mentally, when, in the words of Maudsley, "he turns all impressions into suspicion, takes offence easily, broods over trifles, feels acutely if opposition hurts his self-love, and identifying his self-love with truth and right, persuades himself that he is suffering great wrong". Hypersensitiveness leads naturally to introspection and a feeling of inferiority, or to chronic irritation and friction in one's social relationships.

Morbid indecision may be an important indication of incipient mental illness. It may show itself merely in an unaccustomed difficulty in making up one's mind or it may be so extreme as to inhibit action. It is a cardinal and very distressing symptom in psychasthenia, but it is also an important symptom in melancholia and in the neurasthenic stage of general paralysis of the insane.

I remember one psychasthenic young man whose life was made a burden to him by chronic indecision. In the morning he would go through agonies of doubt as to whether he should get out of bed on the right side or the left. After an exhausting struggle, he would finally impulsively throw himself out of bed on one side or the other, only to find himself no better off, as he was then faced with the problem of deciding which boot he should put on first, the right or the left.

Indecision is associated with irresolution, and the patients, even when they succeed in deciding on a line of action, cannot hold to it. Indecision as a symptom is of course far more significant when it occurs in a person who was previously resolute and decisive.

Incapacity to adapt oneself to the slightest change in one's routine may be a premonitory symptom of mental breakdown. Sometimes a kindly employer notices that one of his staff is not doing his work as well as he used to and does not appear to be quite himself and, thinking to make things easier for him, transfers him to a simpler and less worrying job. This usually has the effect of precipitating a mental breakdown rather than preventing it. The man worries about his transfer and the reason for it, and finds it harder to adapt himself to a new routine than to carry on the intrinsically more difficult work with which he was familiar.

A tendency to indulge in morbid reverie and day dreaming is an indication that things are far from right with a person mentally. By morbid reverie I mean a reverie which confines itself to a review continually repeated of past mistakes and shortcomings, of present trials and of ills to come, a constant preoccupation with the thought "if only I had acted differently, if only I had done this or not done that, things would have been different". It would be absurd to regard all day dreaming as pathological, for in the words of Craig: "The adult has his day dreams, but they ought to be an outgrowth of reality, a visualizing of some ambition that is as yet far off, but the contemplation of which affords encouragement in the present and a vision of hope for the future." By morbid day dreaming I mean making use of phantasy formation as a substitute for real achievement and as a compensation for deficiencies in place of facing one's task and acknowledging and striving to make good one's defects. Day dreaming of this type implies a retreat from reality and is a serious symptom suggestive of *dementia præcox*.

Loss of social interest is often one of the earliest symptoms of mental illness. The patient, who may formerly have been quite sociable, does not want to go out, does not want to see his friends, does not bother to attend meetings or to go to entertainments. Still less does he trouble to write letters.

Yet another early manifestation of mental disorder is the development of an obsessive state; by this I mean a state in which the patient suffers from a tendency towards compulsive thinking and compulsive action. He fully recognizes that something is wrong with him and that his condition is pathological. He feels himself impelled to do all sorts of things that he does not wish to do, and that he feels to be foolish and unreasonable. He struggles against the feeling of compulsion, but in the end yields to it and experiences a certain relief of tension, which is, however, only temporary. Doubt and indecision are an invariable accompaniment of obsessions. As examples of the milder forms of obsessions, one thinks of people who have to go back to a room repeatedly to assure themselves that they have turned out the gas, of people who seal up their letters and then have to reopen them perhaps several times to make sure that they have put in the desired enclosure, of people with impulsions towards touching certain objects, and so on. Sometimes the state of obsession shows itself in compulsive thinking rather than compulsive action. The patient feels himself compelled to think about all sorts of things that he does not wish to think of, and sometimes the thoughts are impure or blasphemous and cause infinite distress of mind. But time will not allow me to pursue the important subject of obsessions further, except to say that although the content of any individual obsession is no doubt psychologically determined, the occurrence of obsessions is certainly not so. Obsessions are met with in *dementia præcox*, in psychasthenia, in melancholia, and to my mind most significantly of all in *encephalitis lethargica*.

It should be stated for the peace of mind of the lay members of my audience that in the majority of cases the victims of obsessions do not become insane, and that very few of them have to seek treatment in mental hospitals, although their capacity for work may be very seriously interfered with.

A tendency to abstraction, apathy, inattention and want of alertness in an adolescent boy or girl is an urgent danger signal that should never be overlooked.

Morbid preoccupation with religion or religious mania does not exist as form of insanity, but occurs as a symptom in more than one mental disease. The development of over-conscientiousness and of morbid religious scruples is often an early indication of mental illness. The person worries because he has done a trifling piece of work on a Sunday. He reproaches himself with not having said his prayers with sufficient sincerity or earnestness and repeats them all afresh. He goes on his knees and prays at inappropriate times and in unsuitable places. He devotes a disproportionate and unreasonable amount of time to poring over the scriptures. He goes in for all manner of queer asceticisms and acts of atonement. He has a morbid desire to confess his sins, real or imaginary. These symptoms are disturbing enough, but if a person finds himself constantly dwelling on one idea, for example, that he may be a reincarnation of one of the prophets or a new Messiah, he should, if it is not too late, say, with King Lear, "O that way madness lies, let me shun that."

The symptoms in a patient that should make one fear the development of paranoia are moodiness, shyness, aloofness, distrust, unsociability and at the same time a passionate striving for recognition, an embittered and rancorous view of life and a tendency to blame other people and circumstances for his own want of success.

Apart from the natural deterioration that goes with advancing years, impairment of memory is always a serious symptom. In the beginning it may be merely a new and unwonted forgetfulness; the patient forgets where he has put things, forgets resolutions, forgets appointments.

I remember a patient who after treatment with malaria made a good recovery from general paralysis of the insane, telling me that one of the first indications of his illness was the fact that he would forget in what part of the city he had parked his motor car and would be unable to find it when he wanted to go home.

Insomnia.—If the preceding symptoms may be compared with the gathering clouds on the horizon which warn the experienced mariner to alter his course and take in sail, then insomnia is the wind which heralds the breaking of the storm. Insomnia may be defined as the inability to secure a sufficiency of natural sleep under favourable external conditions. It would be ridiculous to suppose that, because a person is suffering from sleeplessness, he is necessarily heading for insanity. In any individual case the insomnia must be assessed in relation to other symptoms, to the presence of absence of an adequate cause, to the patient's heredity and temperament. Insomnia may result from physical discomfort, such as pain or cough, or may occur in association with a great number of organic diseases, such as *encephalitis lethargica*, heart disease, high blood pressure, gastro-intestinal disturbances *et cetera*. In the great majority of cases, however, insomnia is psychogenic in origin and is caused by worry, anxiety or mental conflict.

There are a great number of things I should like to say about insomnia, its causes and its treatment, but I have to remember that my lecture tonight is not on insomnia and that I am speaking of it merely incidentally as the most important of all the premonitory symptoms of mental disease. It may precede an actual breakdown by days, weeks or months. It is often an early symptom of general paralysis of the insane; it may be the first warning of the onset of *delirium tremens*; it frequently ushers in an attack of melancholia or of mania, and is commonly met with in the early stages of *dementia præcox*. It often precedes the onset of a confusional psychosis. It may be persistent and severe in psychasthenia. One could easily multiply instances. When insomnia is associated with loss of weight, it is of more serious import than an insomnia not so accompanied. In my experience that type of insomnia in which the patient awakes in the early hours of the morning and is unable to sleep again is more significant than when sleep is delayed at the start. Sleep that is interrupted by disturbing and unusual dreams, sleep that is semi-conscious, and sleep that occurs in such short snatches that the patient denies that he has been asleep at all, has the same significance as a more frank insomnia. To sum up, if a person finds himself suffering from insomnia for which no special cause can be found or which is protracted and severe, then he is up against an urgent danger signal and should lose no time in seeking competent medical advice.

Usually a mental breakdown comes on slowly and insidiously, but sometimes towards the end it may come on more quickly, like a tidal wave, sweep the patient off his feet and overwhelm him before he knows where he is. Sometimes, especially in confusional insanity, the onset may be almost abrupt.

But I see that my allotted time has expired and I would betray my own ignorance of mental hygiene if I were to continue this lecture much longer. To those of my audience who may themselves happen to be mentally unstable or biologically unfit, I offer my sympathy and I hope that, win or lose, they will fight to the end, because no safety is to be found in flight. They should not be bitter nor indulge in self-pity, but rather take comfort in the thought that men grow strong by bearing burdens. To them I would recommend two books. The first is entitled "The Mastery of Sex Through Psychology and Religion", by Weatherhead; the second is a little book called "Why Worry", by George Walton. Finally, as a slogan, I would suggest to them the one word, "courage".

SOME CEREBRAL TUMOURS: EXPERIENCES AT THE ROYAL ALEXANDRA HOSPITAL FOR CHILDREN.

By FRANK TIDSWELL, M.B., Ch.M. (Sydney), D.P.H. (Cambridge),
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THE present fashion correlates cerebral tumours with the embryology of the nervous system. The portion of epiblast concerned in the folds which produce the neural canal and crest becomes the neuro-epithelium which gives origin to the whole of the nervous tissue of the body, both central and sympathetic. So far as the central system is concerned, there is formed within the canal a single-celled lining, ependyma, and a multinucleated syncytium from which emerge undifferentiated cells, medulloblasts, evolving further in two lines. In one direction the medulloblasts give rise through spongioblasts and astroblasts to astrocytes, mature neuroglia cells; in the other direction the medulloblasts form neuroblasts and these form neurocytes, neurones, mature nerve cells.

It is held that differentiation may cease at any one of these stages, the cell of the stage reached devoting itself entirely to reproduction with the formation of tumours represented by the cell type of that stage. So there are recognized ependymoma, medulloblastoma, spongioblastoma, astroblastoma and astrocytoma in the glioma series, and neuroblastoma and neurocytoma in the neurone series as examples of tumours of neurogenic derivation. Additionally there are tumours in the brain which are not neurogenic, but derived from the mesoblast which becomes mixed with the epiblast during development, for example, meningioma, angioblastoma; there are growths of infective origin, for example, tuberculoma, syphiloma; and there are metastatic deposits from tumours in other parts of the body.

In our series of twenty-two tumours there are examples of several of the neurogenic types, all immature and gliomatous. We have not met with differentiated nerve cell tumours, nor with mesoblastic, infective nor metastatic formations. Our list comprises one ependymoma, one pinealoma, two medulloblastomata, one spongioblastoma, and seventeen astrocytomata (including two possible astroblastomata). These designations were applied on the basis of what appeared to be the dominant type of cell, for, in fact, the tumours nearly always showed mixtures of two or more types. In series they displayed practically all grades, from a soft, irregular, wholly cellular mass of immature cells up to a compact, circumscribed arrangement of cells and fibres differing little in appearance from normal neuroglia. Our experience in this respect is thus in accordance with authoritative pronouncements.

The reported studies of the various types point to their having each a more or less distinctive natural history. The primitive neuroblastomata (neuro-epitheliomata) are associated with the early years of life, and preferentially are situated in the fourth ventricle region and cerebellum. They grow rapidly and tend to metastasize into the pia. They are very malignant, not usually amenable to satisfactory surgical removal, but are said to be radiosensitive. Our two cases were in the cerebellum of children eight and ten years old respectively, and did not show metastases. The spongioblastomata (glioblastomata, gliosarcomata) are tumours usually of the middle-aged cerebral hemispheres and *corpus callosum*. This has led some authorities to regard them as dedifferentiated rather than undifferentiated; as anablastic reversions of mature cells and not as incompletely developed cells. The tumours are of rapid and wide infiltrative growth, soft, liable to cystic degeneration and hæmorrhage, and have been reported as "cerebral apoplexy". They cannot be cleanly extirpated and so are apt to recur, and they are not radio-sensitive. Altogether they are a rather hopeless type. Our case was a widely diffused growth of the parietal and frontal lobes of the cerebral hemisphere in a child of twelve years—the same age as the previously reported youngest patient. The astrocytomata (gliomata), being of more mature type, are of slower and gentler character. They occur in the cerebrum and cerebellum, the latter especially in children. Preferentially mid-line tumours, they occupy the vermis and extend laterally into the cerebellar hemispheres. They may be well defined or merged with the cerebellar tissue, but are sometimes cystic, with a button of growth (mural nodule) projecting inwards from the wall. Astrocytomata are the commonest tumours of our experience, numbering seventeen, though two might have been called astroblastomata. Two were in the cerebrum and fifteen in the cerebellum. Their features conformed generally to the foregoing description, as will be seen later. Ependymoma, being of a mature type of cell, is also of slower growth, sometimes clinically latent for years. It is a tumour of childhood and frequently cerebellar, although our case, in a boy of seven years, developed from the wall of the third ventricle. The pinealoma is a related tumour developing from the cells of the roof plate, but modified in relation to its endocrine functions. Our example was in a boy of eleven years, and projected loosely into the third ventricle.

Another phase of recent work is designed to connect the pathological types with a clinical picture, and so to elaborate syndromes with a localizing value. The most complete of these is the "composite picture" of cerebellar astrocytoma drawn by Harvey Cushing (*vide infra*), but from other attempts in this direction there are beginning to emerge other presentations covering pituitary and suprasellar tumours, chiasmal gliomata, third ventricle tumours, pinealomata, *"corpus glioblastoma"*, olfactory meningioma, amongst other conditions less clearly defined. Such comparisons with these pictures as our evidence affords will be made hereunder, but immediately we may note some general features of our cases.

Description of Tumours.

Five of our tumours were cerebral, three pontine, and fourteen cerebellar, the figures agreeing with the general experience that the cerebellum is the site of about 60% of tumours in children.

The ages of the children ranged from one to thirteen and a half years, ten being under and twelve over five years. Our series is too small to have significance as regards incidence generally, and, moreover, admission to the hospital is restricted to children under twelve years of age. Within our limits age afforded no guidance in differentiating the types. The two primitive medulloblastomata were in children eight and ten years old respectively. The spongioblastoma was in a child of twelve years. The mature astrocytomata were in children whose ages ranged from one to thirteen years.

The ascertained duration of the tumours was from five weeks to four years. Generally it is considered that the cellular primitive types are of more rapid growth than the maturer forms. Four of our five cerebral tumours were cellular and had revealed themselves only a few months before death; the remaining cerebral tumour was a very mature astrocytoma and had lasted for four years. The medulloblastomata, very primitive in type, were of brief duration; one had existed six months and the other rather indefinitely seemed to have shown itself only about a month before death. Of the astrocytomata the two more cellular ones (astroblastomata ?) had endured five weeks and twelve months respectively, whilst the fibrous examples had histories ranging from two months to two years. The figures given are to the effect that whilst the cellular tumours are of more rapid evolution, the more mature astrocytomata are assigned both shorter and longer periods and so are less clearly delineated in this respect. But our data, being obtained from the routine notes taken on admission of the patient to hospital, may not accurately represent the facts. In the few cases in which special inquiry was made, the earliest signs of astroblastoma date back twelve months or more, and it is thought that a more probing examination would show a more lengthy duration in most, if not all, the others. At all events, our evidence does not seem to warrant any departure from the general opinion on this point.

Cerebral Tumours.

Our five cerebral tumours comprised two astrocytomata, one ependymoma, one spongioblastoma, and one pinealoma.

The first was a tumour of the hypothalamic region projecting into the third ventricle. It was reported in detail in THE MEDICAL JOURNAL OF AUSTRALIA of July 23, 1932.

It was a mature astrocytoma of four years' duration, giving rise to generalized fits of increasing frequency and severity and to macrogenitosomia. It suggested endocrine dystrophy, but the pituitary and other glands were normal. Although it occupied the third ventricle, it never caused obstruction, and there were never any signs of increased intracranial pressure.

The second tumour was also of the hypothalamus.

It occurred in a girl of two years, whose head was said to have been unduly large since birth. But she had been healthy until about fifteen months old, when, after removal of tonsils and adenoids, she showed more or less continuous hyperthermia till her death; she developed vomiting, failing vision, and convulsions, with increasing loss of consciousness. The tumour in this case also projected into the third ventricle, but had involved the chiasma in front and blocked the iter posteriorly, with consequent visual defects, increased intracranial pressure and hydrocephalus. Nystagmus was an early sign in this case, perhaps due to pressure near the iter and irritation of the oculomotor centre.

The pinealoma, which may be recorded here, was in a boy of eleven years of age.

It consisted of an enlarged and neoplastic pineal gland projecting forward into the third ventricle. The mass was a flattened oval 3·75 centimetres (one and a half inches) long by 1·25 centimetres (half an inch) thick, and was loose in the ventricle, except for a very fine thread-like stalk which broke when the ventricle was opened. The tumour was solid throughout and composed of pineal cells in alveoli, with many lymphocytes and fine vessels. No sign of teratomatous structures or cysts was present: hence it was a pinealoma.

The history states that the patient had been ailing for only two months. The positive symptoms were the classical triad of vomiting, headache and failing sight, marked double papilloedema. Specifically the clinical notes state that the circulatory, respiratory and nervous systems were clear; there was no œdema, no urinary symptom, no obesity, no polyuria, no sexual dystrophy, no somnolence, and the patient appeared to be temperamentally normal. The ophthalmologist, besides the fundus defects, notes weak convergence with a tendency to divergence, but there was no marked oculomotor defect, nor nystagmus, nor pupil fixity; apparently no disturbance of the eye centres in the *corpora quadrigemina*, which bodies looked normal. The X ray report mentions opening out of the coronal and sagittal sutures owing to rise of intracranial pressure, which, however, would seem to have been intermittent. The urine was cytologically and chemically normal as regards ordinary constituents, but the Board of Health reported 0·12 milligramme of lead per litre (the normal is 0·04 to 0·08 milligramme). There were no clinical signs of lead poisoning, some constipation being more likely due to restraint owing to accentuation of cerebral headache by straining. There was no punctate basophilia in either of two blood examinations, the blood being normal except for some leucocytosis towards the end. The cerebro-spinal fluid was normal. The Wassermann test gave no reaction with both cerebro-spinal fluid and blood. There was no fever. The pulse rate was rapid rather than slow (most often 100 or more) and respiration was correspondingly frequent. Absence of bradycardia has been noted in third ventricle tumours where no pressure is transmitted through the iter and the vagus centre is spared.

The history of this case, whilst showing definite evidence of intracranial tumour, affords no localizing signs. The data of pineal syndrome are entirely lacking.

The tumours just described were all three third ventricle tumours, and there is interest in comparing them with the orthodox syndrome for growths in this region. Tumours which grow from the floor of the ventricle are said to produce pressure, hydrocephalus, blindness when the chiasma is involved, along with disturbance of certain vegetative functions associated with the hypothalamus and related pituitary gland, manifested by obesity, somnolence, polyuria, polydipsia, polyphagia, and sexual dystrophy, usually hyposexualism. Two of our tumours were in the floor.

The first did not involve the chiasma and did not block the iter; it caused no obvious change except the generalized fits and macrogenitosomia (hypersexualism ?). The second did involve the chiasma; it was in effect a chiasmal glioma and did block the iter; so there were blindness and hydrocephalus, but there were no signs of dystrophia. The third tumour was in the roof of the ventricle, in the pineal gland, and so, according to descriptions, could have produced pressure signs and some of the vegetative ones (by secondary pressure on the hypothalamic region), eye palsies by damage to the neighbouring oculomotor centres, and, most characteristically, the mysterious hypersexualism known as *pubertas præcox*.

Our tumour caused pressure symptoms only; no ocular paralyses and no dystrophy, and the special hypersexualism was entirely absent.

It would appear from these issues that third ventricle tumours may not be as distinctive as reports would lead one to expect. There was indefinite somnolence in one of our cases and late stupor in another, but no obesity, no alimentary nor urinary signs, and the only patient showing sexual anomaly had an exaggerated instead of the to be expected depressed condition. Our examples were most disappointingly wanting in the highly interesting symptoms which other observers have found associated with third ventricle tumours.

Our fourth cerebral tumour had developed in the right wall of the third ventricle, but spread diffusely outwards through the thalamus, internal capsule, and lenticular nucleus towards the island of Reil. Amongst the early symptoms were pains in the arms and tremors (basal ganglia effects ?), with, later, left-sided paralysis from involvement of the capsular tracts. These had developed in the course of several months' illness. The tumour in this case was a soft cellular mass with invading extensions of cells through the hemisphere. Although typical rosettes were not found, the growth was thought to be an ependymoma.

The fifth cerebral tumour was in a child of twelve years who, though "backward" and "apathetic", had only recently become ill. Her main symptoms were vomiting, headache, diplopia, left-sided hemiplegia, and stupor, rapidly passing on to death. The autopsy revealed a swollen and soft right hemisphere occupied by diffuse growth in the parietal and occipital lobes, which microscopic examination showed to be a spongioblastoma.

Pontine Tumours.

The three pontine astrocytomata were all characterized by paretic or paralytic and pressure symptoms. Tremor of the hands was early in one, and squint in two cases. These were early cases and were not more thoroughly studied.

Cerebellar Tumours.

The cerebellar tumours comprised two medulloblastomata, two astroblastomata (?), and ten astrocytomata. The medulloblastomata were in the vermis, projecting into the ventricle, obstructing the cerebro-spinal fluid and producing hydrocephalus. They occurred in children eight and ten years old respectively. The duration of one was indefinite, being confused with accompanying rheumatic carditis and "cerebral embolism", but the cerebral signs were of brief duration and ended with blindness, convulsions and coma. In the other case there was headache, vomiting, blindness and ataxia, which had endured for three months.

The two astroblastomata were in the vermis and merged with the cerebellar hemispheres and roof of the fourth ventricle. There was no obstruction to the cerebro-spinal fluid and no manifest hydrocephalus. They occurred in children, aged three and a half and seven and a half years respectively, and trouble had been noticed for twelve months in one case and five weeks in the other. In the longer case there had been abdominal pain, and in the shorter, earache during the early stages, but both patients soon showed the usual headache, vomiting, defective vision and ataxia.

The ten astrocytomata were all more or less discoloured masses of walnut to hen's egg size, in the vermis, projecting variously into the cerebellar hemispheres. Seven were solid and merged imperceptibly with the cerebellar tissue. In two there was a definite margin round most of the tumour, perhaps representing a cyst wall; but there was in these an attachment an inch or more wide to the cerebellum. No case had a manifest cyst and mural nodule. One case showed a small degeneration cyst, and one other was largely translucent colloid. All but one had caused obstruction with more or less hydrocephalus. These tumours occurred in children aged one, one and a half, two, two and a half, three, three and a half, six, eight, eight, and thirteen years respectively, and, according to the records, had endured from two months to two years. As already stated, it is thought that unobserved symptoms may have been present earlier in the shorter cases, some of which were manifestly advanced when coming under observation, and that the durations were often longer than the statements indicate.

Professor Harvey Cushing has written a "composite picture" of cerebellar astrocytoma which is arresting enough to warrant reproduction in this place. He writes:

A child apparently normal in all respects begins towards the end of the first decade, possibly after a fall or an attack of whooping cough, to have early morning headaches and vomiting. Nothing much is made of this by the family doctor, should he be called in, for the child subsequently feels perfectly well, has had breakfast and wants to go out and play. This daily performance may be continued for a considerable time, the child even going to school meanwhile. There may be a remission for weeks, or perhaps months, and the episode is forgotten. On their recurrence the symptoms are likely to be more pronounced and are apt to be ascribed to some gastro-intestinal disturbance. This appears to be the more probable since the child finds that straining at stool brings on a headache and there is a tendency to become constipated. What is more, a mild daily laxative usually serves to completely mask the symptoms. This sort of thing continues off and on till it becomes evident that the child is a little clumsy at play and gets knocked over easily. Very possibly ere this the periodic headache and vomiting will have ceased completely, or at least occurred at much longer intervals; and if parents are observant they may notice that the child's head in the interim has increased in size more than it should. This, however, is usually discounted, for the child meanwhile has become free from complaints and in all respects appears alert and well. Matters may run on in this way for an indefinite

time, possibly with some increase in clumsiness of movement, or in most instances with no noticeable change whatever until it becomes apparent, perhaps at school, that the child's sight is poor. To counteract this, glasses are usually provided, but even should an ophthalmoscope be resorted to, a child's retina is less easily examined than that of an adult, and because of the decompressive effect of the enlarging head, the optic papillæ often show no measurable swelling, and the fact of their being pale and with margins blurred may easily pass unrecognized. It is in this preamaurotic stage that even to day the victims of midcerebellar astrocytomas continue to be admitted to hospital.

Owing to this factor of late observation, our own cases had already developed the three classical symptoms of cerebral tumour—headache, vomiting, and papillœdema. Most of the patients also showed more or less the cerebellar triad of atonia, astasia, and ataxia.

Vomiting was reported in eleven of the fourteen cerebellar tumours and was not with certainty lacking in the other three cases. It was the commonest symptom and the earliest, or amongst the earliest, of the signs, usually matutinal and intermittent at first, but becoming increasingly frequent as the case progressed. Headaches were reported in nine of the cases. It was usually early and of increasing frequency. The intensity varied, and it was sometimes described as "pains in the head" rather than headache. There was nothing to suggest any relationship between the region of the headache and the site of the tumour. Failing eyesight was mentioned in three cases and ocular defects were found in six others (nine in all). These were comparatively late conditions. Several patients had normal fundi in the earlier stages, and in one case there was a complete absence of eye lesions throughout. The reports are almost entirely limited to disk conditions and afford no information as to the visual fields, which nowadays are the subject of much advocacy as an aid to diagnosis in the earlier course.

The children were commonly atonic; "listless", "drowsy", "apathetic", "backward" and "collapsed" were the usual terms. Often they were disinclined and sometimes unable to leave their beds. Difficulty in walking or balancing was recorded in nine cases, and although not amongst the early symptoms, it appeared quite regularly as the case developed and was manifested by staggering gait or falling to one side.

A variety of early stage symptoms—squint (three cases), stiff neck (three), fits or "turns" (three), giddiness, restlessness, limb pains, stomach pains—were mentioned in individual cases. None occurred or was reported with sufficient frequency to have special significance, but they may well have been more important than they seem. It is a tenet of neuropathology that congestion produces irritation and anæmia paralysis. A cerebral tumour, by increasing intracranial pressure and impeding venous return, should set up congestion and irritation, which might be expressed by such early signs. Subsequent compression of the capillaries as pressure increased would produce the lethargic and paretic conditions of the later history. In these later phases disordered function should be "marginal" to a "dead" centre, and if so observed would be of localizing significance. The elucidation of such points would obviously require closer investigation than these cases seem to receive.

But it is just this closer attention to the earlier period that is demanded if progress is to be made with these cases. At present the patients arrive in hospital already advanced to a state involving serious and often irremediable damage to the brain. As seen *post mortem*, not much later, the tumours are of a size which renders successful removal very doubtful. But contact betimes, however desirable, is not likely to be realized failing alertness on the part of practitioners, who alone are likely to see the initial manifestations, and as the outcome, not only of our own, but of general experience we would appeal to them for closer scrutiny of possible cases. It would seem desirable that unexplained vomiting, with or without headache, especially if post-traumatic (falls in four, minor surgery in two of our cases) or post-febrile, should not be lightly regarded, but carefully followed up till the issue is clear. The appearance of any unusual characteristic—irritability, dulness, giddiness *et cetera*, even without the pressure signs—should arouse suspicion and justify reference to specialists. Only by searching early attention is there a chance of securing surgical aid that has a prospect of success. It may call for diagnostic courage to bring such cases forward before the appearance of the classical signs of cerebral tumour, but hesitation is fatal and likely only to prolong the present rather hopeless situation.

Acknowledgement.

I have to acknowledge, as usual, the interest and help of my clinical colleagues in preparing this report.

Reports of Cases.

POISONING BY ANTIMONY.

By WALTER PERRY, M.B., Ch.M. (Sydney), F.R.A.C.S.,
Honorary Assistant Surgeon, Saint Vincent's Hospital, Sydney,
AND
ARTHUR PALMER, M.B., F.R.C.S. (Edinburgh),
Government Medical Officer, Sydney.

A WOMAN, aged seventy-five years, living in a boarding house, was addicted to bouts of alcoholism and was said to have drunk a bottle of whisky a day for the previous fourteen days. For three or four days before being seen she had been vomiting almost continuously and had become semiconscious.

On examination the patient, an aged female, was stuporous, but easily aroused. The skin was dry; the facial appearance was that of myxœdema; the hair was scanty and the tongue dry; the voice was deep as in a myxœdematous patient; the temperature was subnormal; the abdomen was full and exceedingly tender on pressure in the epigastrium; the liver was not clearly palpable; the heart, blood pressure and nervous systems were normal. The urine contained acetone.

A diagnosis was made of alcoholism and myxœdema and thyreoid (half grain three times a day) ordered.

Next day the patient had been vomiting greatly after a night-time draught which had not been prescribed.

That evening one of us was given an unlabelled bottle of clear fluid, some of which was said to have been given to the patient every evening for some time. The analysis of this, carried out by Mr. S. G. Walton, Government Analyst, showed that the bottle contained approximately half an ounce of liquid, which was found to contain 1·7% of tartar emetic, equivalent to 0·9 grain per teaspoonful.

The patient was removed to a private hospital; her condition immediately began to improve and she soon recovered.

The hair, fæces and urine were submitted to Mr. Walton for examination and he reported that the urine contained approximately four milligrammes of antimony per litre; the fæces (the weight of which was six grammes) contained 0·2 milligramme of antimony; and the hair contained approximately 0·1 milligramme per 100 grammes. A small quantity of toe nail was also submitted, but no antimony was detected therein.

The matter was placed in the hands of the police officers, to whom the woman in charge of the boarding house stated that she had asked a chemist friend what to do to stop the craving for alcohol, and he had supplied her with a bottle of medicine, the result of analysis of which has been given. This the chemist denied, but the police were satisfied that the woman's story was true. It certainly appears to have been a dangerous proceeding, especially in a somewhat feeble and old woman.

One rarely gets a chance in these times of studying poisoning by antimony. This drug was much more used by general practitioners in former times than it is now. Cushny states that in the seventeenth century it was prescribed so widely and was believed to do so much harm that the graduates in medicine at Heidelberg were required to take an oath never to use it. At that period it was apparently a rival to arsenic as a poison, being given to the victim in repeated small doses, causing symptoms resembling wasting disease, with gastro-intestinal irritation, and being frequently overlooked by the attending physician in the same way as has often happened with arsenic, which may give a somewhat similar clinical picture. Even medical men have chosen antimony for the purpose of murder. In the well known case of Mr. Bravo, it is stated in "Taylor" that he had purchased quack powders, extensively advertised as a cure for dipsomania, which contained half a grain of tartar emetic, and it was suggested that he had taken some of these powders in order to get rid of laudanum which he had swallowed.

In the case here reported the action desired was apparently that claimed for the quack powder, but fortunately the patient did not die.

It was thought that the use of tartar emetic for the cure of insobriety had fallen into disuse. This case suggests that it may be more frequently prescribed by chemists than is supposed by the medical profession.

One of the main points of interest is that antimony, like arsenic, is deposited in the hair.

Reviews.

POPULAR FALLACIES.

The author of "One Hundred Popular Fallacies" is a clergyman who holds a medical qualification and who has written several works on health subjects. These popular fallacies were originally published in "Maternity and Child Welfare", and as a regular feature of that magazine no doubt provided popular amusement and appropriate instruction. Served up again in slab form, however, they are apt to prove tedious, especially as there seem to be grounds for the suspicion that to make his century the author has been constrained to invent some of them. Many are old, but widely and tenaciously accepted as axioms, and cannot be too often refuted, such as "that pain in the back means kidney disease". Others, for example, "that the sun's rays pass through glass", have been more recently recognized, and it is most useful to refute them. Occasionally, however, it is difficult to agree with Dr. Budden. It is not conducive to good order and discipline to hold as a fallacy "that a naughty child should be punished". There are really 101 fallacies enumerated, the two last being evidently intended to disarm the critic. Number 100 is "that the writer of these fallacies is infallible", and number 101, "that one is 'blessed' with a sense of humour". It appears that one is "cursed", not "blessed", and that the author is among the afflicted. He relates how his levity lost him a patient, who found it very bad taste (he told her to suck a cascara tablet). He also pleads guilty to the use of hyperbole to drive home his argument. Several rather obvious fallacies occur to us, but it will suffice if we recommend Dr. Budden to replace levity with brevity and humour (which he undoubtedly possesses) with wit.

[1] "One Hundred Popular Fallacies", by C. W. Budden, M.A., M.D., Ch.B.; 1932. London: John Bale, Sons and Danielsson, Limited. Crown 8vo., pp. 170. Price: 3s. 6d. net.

NERVOUS DISORDERS IN CHILDREN.

Dr. Neill Hobhouse, the writer of a manual on nervous disorder in infancy and childhood,[1] is on the staff of both the Victoria Hospital for Children and the West End Hospital for Nervous Diseases, London, and therefore combines the qualifications of a pædiatrist and a neurologist.

In his preface he modestly and truthfully states that his object in writing is not to give a cut and dried text book description of the various nervous affections of childhood, but to discuss practical matters concerning diagnosis, prognosis and treatment, for which space cannot be found in text books.

As indicating the scope of the book, it contains something concerning all the commoner organic and functional nervous disorders to be met in hospital and private practice. And while the chapters on infantile cerebral palsies, encephalomyelitis, hyperkinesis and disturbances of sphincter control may be singled out as being specially good, there is no chapter without some instruction which even the best informed may be glad to receive. Here are some exemplary remarks epitomized. Much of the pessimism with which infantile cerebral palsies have been regarded in the past has been quite unfounded and largely due to delay of treatment until after the appearance of deformities. The one and only therapeutic process which reduces spasm and restores function in a spastic palsy is active movement. The only known cause of convulsions, in the absence of somatic disease or demonstrable metabolic change, is an inherent predisposition to them which we are accustomed to call essential epilepsy. Paroxysmal attacks of vertigo may be epileptic, or, as is more likely, due to aural disease, such as impacted wax or otitis. Syphilis plays a remarkably small part in the causation of nervous disorders in childhood, but 50% of cases of Raynaud's disease in children are syphilitic and respond to specific treatment. Persistent, so-called "cyclic vomiting", without dietetic defect or a cerebral lesion, may be the juvenile form of migraine. Isolation is essential in Sydenham's chorea, but every other kind of hyperkinesis (fidgetiness) demands directly opposite treatment. Absent knee jerks in a healthy child may signify past diphtheritic infection, and, in a case of chorea, excessive administration of arsenic.

The writer evidently possesses a rich experience, and upon this rests opinions which he expresses with confidence and without extravagance.

We have no hesitation in recommending the book as one easily read and practically useful to all who have dealings with sick children.

[1] "Nervous Disorder in Infancy and Childhood", by N. Hobhouse, M.D., M.R.C.P.; 1932. London: H. K. Lewis and Company, Limited. Demy 8vo., pp. 215. Price: 8s. 6d. net.

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All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for publication, are invited to seek the advice of the Editor.

POST-GRADUATE TRAINING.

By common consent the term medical student is applied to a man or a woman studying medicine at a university prior to graduation. Accuracy would demand the use of the word undergraduate in reference to such a person. It would be much better and would show a healthier idea of values if medical graduates were classified as medical students and medical drones. All graduates do not realize the need for perpetual studentship. Medical science is becoming so involved and the successful treatment of certain diseases is so dependent on an intimate knowledge of biochemical, pathological and other data that the drones are finding it increasingly difficult to drift through life making a comfortable living by the charm of their manner and other camouflage peculiar to their kind. The drones are therefore becoming fewer.

For Australian students of medicine post-graduate facilities have during the last few years been largely extended. Committees exist in every State for the organization of demonstrations and of courses of post-graduate lectures. Reference has been made in these pages on many occasions to the need for the coordination of the work of these committees, and, if unofficial statements are to be believed, there is a likelihood of something being done in this direction. We have also seen what may be regarded as the beginnings of continuous post-graduate teaching for medical practitioners. To sit back and to await the gradual evolution of a regular system of coordinated post-graduate teaching for Australia would be simple, but it would be drone-like. If attention is drawn again to avenues along which advance should be made, evolution may be hastened.

In its scheme for the training of surgeons the Royal Australasian College of Surgeons has made use of the old custom of apprenticeship. During his training under this scheme, the young surgeon would be allotted to the care of a senior or seniors who would superintend his work. The trainee would have the benefit of the experience of the older man and while he was learning to apply his theoretical knowledge he would be watched, criticized and helped. The advantages of such a system are obvious. When an Australian practitioner, after perhaps years of reading and study, wishes to specialize in some branch of practice, such as oto-rhino-laryngology, he goes abroad to England, the Continent of Europe or America. He attends lectures and in some places has opportunities of doing work under the instruction of a senior—he has the benefit of the apprenticeship system. He cannot have this advantage unless he leaves Australian shores. There should be no difficulty in making arrangements for the introduction of such a system in Australia. These arrangements must be made by the Central Council for Post-Graduate Work in Australia, if and when such a body is created. Everyone concerned would reap a benefit. Teaching hospitals would agree to receive a limited number of student clinical assistants who would pay fees to the institution. The senior physician or surgeon under whose supervision the student assistant was placed, might or might not receive fees; in any case he would gain in status and in reputation as a teacher; he would be the real head of his clinic. If the university in the teaching centre were made a partaker in the scheme, and it might well be, the

head of such a clinic might receive university recognition. The patients attending the clinic would be at no disadvantage, for they would receive the intensive study always associated with careful teaching. The student assistant during his apprenticeship would be able to study for the higher degree or diploma of his university in the subject he had selected. He would certainly have to pay, but he would pay less than if he had to travel overseas. While on the one hand the student would not have the advantage of the wider outlook to be gained by association with workers in other lands, the hospitals in Australia, when they were making appointments to their staffs at a later date, would know whether the candidate had really done any work—they would know that he had not been pleasure-seeking abroad when he was supposed to be working.

Current Comment.

VITAMIN D.

The discovery and isolation of vitamin *D* and its application in clinical medicine form one of the most brilliant achievements in biological chemistry. Progress during recent years has been so rapid that relatively few medical practitioners have been able to keep track of each new advance. At first vitamin *A* and vitamin *D*, the two fat-soluble vitamins, were not recognized as separate entities. It was found that the antixerophthalmic action of cod liver oil (due to vitamin *A*) was destroyed by oxidation at 100° C. for from twelve to twenty hours, and that its antirhachitic action (that of vitamin *D*) could be demonstrated after this treatment. Qualitative and quantitative differences were also found in the distribution of these two vitamins in foodstuffs. Later on, evidence gradually accumulated that certain forms of radiation could produce antirhachitic properties in the animal organism and in natural foodstuffs composing the diet, while no antixerophthalmic effects became manifest. In this way vitamin *A* and vitamin *D* became recognized as distinct fat-soluble accessory food factors, each of which was necessary for the satisfactory growth and nutrition of mammals.

Experimental investigation was directed along the right channels by the discovery that the effect on the animal of irradiation could be equally well evoked by irradiation of its diet. It was also found that the livers of irradiated rats on a diet devoid of fat-soluble vitamins acquired growth-promoting properties, while the livers of non-irradiated rats did not. After it was determined that irradiation resulted in the production of vitamin *D* and that foodstuffs which were irradiated had an antirhachitic power, further analysis revealed that the capacity to become activated resided only in those constituents of the diet that contained fat. It was the fats which became antirhachitic on irradiation. This property of fats is not inherent in their main constituents, the fatty acids and glycerol, but is restricted to the unsaponifiable fraction. Subsequently (in 1925) three groups of investigators—Steenbock and Black; Hess, Weinstock and Helman; Rosenheim and Webster—discovered simultaneously and independently that the animal sterol, cholesterol, and the plant sterol, phytosterol, could be converted by ultra-violet rays into rich sources of vitamin *D*. In 1926 Rosenheim and Webster found that when cholesterol was irradiated, more than 99% remained unchanged. These workers and others investigated a large number of substances allied to cholesterol without result, and it was recognized that cholesterol contained an "impurity" which could not be eliminated by recrystallization. The search for this so-called impurity, the provitamin *D*, eventually proved successful. Experimental work had been carried out with irradiated ergosterol, and provitamin *D* and ergosterol were recognized as identical in 1927. The story of the crystallization of calciferol from irradiated ergosterol is fresh in the minds of those interested in the subject. In the special report on the vitamins issued last year by the Medical Research Council the statement is made that in all probability calciferol, "a stable crystalline substance of the highest antirhachitic activity yet obtained, is vitamin *D* in a state of purity".

The foregoing statement is admittedly a sketchy outline of the growth of knowledge about vitamin *D*. The framework may be regarded as complete and soundly built, but certain details of the structure remain to be determined. An interesting study has been reported by H. Steenbock, S. W. F. Kletzien and J. G. Halpin.[1] Their investigation is explained by the title of their paper: "The Reaction of the Chicken to Irradiated Ergosterol and Irradiated Yeast as Contrasted with the Natural Vitamin *D* of Fish Liver Oils." There is no need to describe the work of these investigators in detail; it will suffice to discuss some of their conclusions and to try to show how they were reached.

A series of experiments was carried out with irradiated ergosterol and with yeast. In two lots of experiments it was found that it required 40 to 120 times more rat units of vitamin *D* in the form of irradiated ergosterol to effect calcification equal to that obtained with cod liver oil. In other lots of experiments yeast also "showed itself to be a poor source of vitamin *D* for this species". Steenbock and his fellow workers also found that irradiated ergosterol in excessive doses was toxic for chickens. This conclusion was made as the result of observations on four chickens which were given in their food 2% cod liver oil carrying in solution 532,000 rat units of vitamin *D* as irradiated ergosterol; this represented the equivalence of approximately 40,000% of cod liver oil.

[1] *The Journal of Biological Chemistry*, July, 1932.

These findings are extremely interesting. Light may possibly be thrown on them by considering the divergent findings of many authors on the effects of large doses of irradiated ergosterol. In a monograph of the Pickett-Thomson Research Laboratory, published in September, 1931, Dr. Ethel Browning points out that workers with different opinions on this subject may be divided into three groups: (i) those who postulate a lethal effect of overdosage, (ii) those who have found definite symptoms of toxicity, (iii) those who have found no ill-effects even with a dosage considerably larger than that required in the treatment of rickets. Browning points out that in spite of the accumulating evidence of the toxicity of irradiated ergosterol, some workers have found difficulty in reproducing the lesions. She enumerates the various explanations that have been put forward to explain divergent results. First of all it has been suggested that some independent toxic factor may have been at work, possibly the solvent used in the irradiation of the ergosterol. Another suggestion is that conflicting results may be explained by the fact that different species of animals react differently to an excess of vitamin *D*. It is also possible that overdosage of vitamin *D* may be injurious when applied in conjunction with deficiency of another vitamin. Another suggestion is that irradiated ergosterol may be more toxic to animals if their vitamin-free basal diet has a high calcium content. These statements are enumerated to show that unanimity has by no means been reached on all the aspects of the action of large doses of irradiated ergosterol. But, though Steenbock and his collaborators produced toxic effects in their birds by enormous doses of ergosterol, the finding to which they apparently attach most importance is the reduced effectiveness of ergosterol as compared with cod liver oil. They state that it is obvious that no exact conclusions can be drawn from their results regarding the comparative efficacy of irradiated yeast, irradiated ergosterol and cod liver oil, because the variations in their different series were too large. They add, however, that their results demonstrate the inefficiency with which both irradiated ergosterol and irradiated yeast serve as antirhachitic agents for the chick. They hold that with a slight variation in conditions the effectiveness of yeast and ergosterol for producing normal bone is greatly modified. They think that if their basal ration had been productive of a less severe rickets, and if it had been more effective otherwise, the chances are that the results of the different series would have been more concordant. (The ration of the birds used by them consisted of skim milk with a mash of yellow corn, 97; calcium carbonate, 2; and sodium chloride, 1.)

Steenbock and his fellow workers state that they are forced to surmise that either the vitamin *D* produced by radiation is a different substance from that found in cod liver oil, or cod liver oil contains something which has an effect upon the efficiency with which vitamin *D* functions. After feeding irradiated ergosterol to birds in corn oil and in cod liver oil and finding the same degree of antirhachitic efficiency and the same toxicity, they conclude that "the vitamin *D* produced by ordinary irradiation of ergosterol with a quartz mercury vapour lamp is a different substance from that found in cod liver oil". This statement is revolutionary. It is a pity that they do not state in what they think the difference consists. If the substance produced is different from that in cod liver oil, ergosterol cannot be regarded as provitamin *D*; and the statement of the Medical Research Council already quoted is incorrect. It is remarkable that apparently anomalous results have been obtained with experiments on birds. In view of the statement of the Medical Research Council, irradiated ergosterol cannot, on this evidence, be taken from its high place. It would be most unwise to apply the findings in birds to human beings and to regard ergosterol as inefficient in comparison with cod liver oil.

As far as toxicity of irradiated ergosterol is concerned, it is interesting to note that at the Conference on Vitamin Standards, held at London in June, 1931 (Steenbock was a member of this conference), it was determined that, in view of the toxic effects reported after the administration of certain specimens of irradiated ergosterol, all preparations of irradiated ergosterol destined for medical use should be tested for toxicity as well as for antirhachitic potency.

THE CURABILITY OF ASTHMA.

IN 1928 F. M. Rackemann studied 1,074 patients who had been treated for asthma, and found 213 who had been relieved of their symptoms for two years or more. He has now made a further report on these 213 patients.[1] Of the 213, 107 suffered from extrinsic, 91 from intrinsic and 15 from unclassified asthma. He finds that 131 are still "cured", 49 have had a recurrence of asthma, six have died and 27 could not be traced. Of the 131 who are still "cured", 64 suffered from extrinsic, 55 from intrinsic and 12 from unclassified asthma. He points out that cure is accomplished by "removal of the trigger which fired the attack, but obviously the gun remains loaded in most, and probably in all, cases". Rackemann's paper should be studied by all who treat asthmatics. While it will make them realize that we know very little about asthma, it will show them that careful treatment can accomplish much. Rackemann is probably right when he lays stress on the need for study of the capacity to develop sensitiveness to foreign substances. The fundamental problem, in his opinion, does not lie in the sensitiveness to any particular protein or in the incidence and treatment of nasal disease. At the same time protein sensitiveness and nasal disease must occupy the attention of the clinician, and Rackemann shows that prognosis must always be guarded.

[1] *Archives of Internal Medicine*, December, 1932.

Abstracts from Current Medical Literature.

PÆDIATRICS.

Erythrocyte Sedimentation Rate in Juvenile Rheumatism.

N. G. Hill (*The British Journal of Children's Diseases*, September, 1932) draws attention to the fact that classical rheumatic fever is a rarity in childhood. He mentions that even observations of temperature, pulse rate while the patient is asleep, regularity and quick return of pulse to normal after exercise, still often leave the clinician in doubt as to the conduct of the convalescence. He has applied the erythrocyte sedimentation rate, as determined by the Westergren apparatus, to this problem. Readings of 4 : 10 or 3 : 8 (first and second hour specimens) were regarded as satisfactory and indicative of a healed cardiac lesion. In active rheumatism readings of over 40 : 80 may be expected. Too much attention should not be paid to minor differences in sedimentation. He finds that the group with an erythrocyte sedimentation rate between 10 : 83 and 35 : 68 are those requiring most supervision, as they give satisfactory results to tests and yet from certain indefinite clinical evidence or from subsequent developments are actually unhealed. The erythrocyte sedimentation rate in chorea may be difficult to interpret and is less to be relied upon, inasmuch as patients with active movements may give normal readings. He finally reminds the reader that the erythrocyte sedimentation rate is not a specific test and that a thorough clinical investigation can alone determine the cause of variation in the findings.

Diphtheria Immunization.

R. A. Strono (*Archives of Pediatrics*, September, 1933) describes the more recent simplification in active antidiphtheria immunization. He concludes that all children should be actively immunized in the pre-school age (three months to six years) without being subjected to a preliminary Dick test. He makes an exception with those children showing decided allergic tendencies, who should still be treated as a class requiring special desensitization. He would use for this purpose two or three one cubic centimetre doses of diphtheria toxoid (Ramon anatoxin) at intervals of three weeks. Other children show more local sensitiveness to foreign protein and they should have a preliminary sensitivity test before the injections are given. If this test gives a positive result, the toxoid should be given in smaller doses, spread over weekly rather than three-weekly intervals. Rural children should show a greater susceptibility, as judged by the Schick test, than city children. It is believed that toxoid will soon replace toxin-antitoxin as a better immunizing agent. It is 20% to 30% more effective, even in two doses; it contains no serum to sensitize the patient to serum which may be subsequently administered; it is more stable and is not affected by freezing, which is an important fact in these days of universal electric refrigerators.

The Schick Test in Infancy.

Joseph Greengard (*Archives of Pediatrics*, August, 1932) has examined the results of the Schick test in a series of 584 cases. Positive reactions in the first week of life were obtained in 17·6% of the infants, increasing to 70·6% in the group from nine to twelve months of age. This is in strict agreement with the statistics of other observers. The transition from a failure to react to a positive reaction was demonstrated in 114 of these infants. The curve showed the great variability in the duration of the passive immunity derived from the mother, in some disappearing as early as the first to third month of life, while in others it persisted as long as eighteen months. Sixty *per centum* of new-born children of mothers who gave a positive reaction to the Schick test, gave no reactions, and in every instance in which a reaction was obtained from the infant, it was much less intense than that of the mother. All infants whose mothers did not react to the Schick test likewise did not react. Failure to react to the Schick test is of no significance in the new-born period, and this lack of reaction is demonstrated by other types of skin irritants as well, and so is a non-specific cutaneous anergy.

An Elaboration of the Spine Sign in Poliomyelitis.

L. Charles Rosenberg (*Archives of Pediatrics*, October, 1932) expresses his reliance upon the spine sign as the earliest indication of meningeal invasion in poliomyelitis. He emphasizes the importance of observing the movements of the child in bed when asked to sit up or turn over. Usually the child holds his arms straight behind him to support his back, and will refuse to fold them in front. If any doubt exists, the author insists on the child being stood upon the floor and asked to touch his toes without bending his knees. He finds this to be much more conclusive than when the patient just kisses his knees in bed. If the child is an infant, it is turned face down on the bed, one hand is placed over the upper lumbar spines and the other is used to grasp both lower limbs. The spine is then flexed and rotated in all directions in order to elicit resistance or pain.

Vincent's Infection in Childhood.

C. E. Killett (*Archives of Disease in Childhood*, October, 1932) discusses the history and results of infection with the fuso-spirochætal symbiosis associated with the name of Vincent, and refers to its incidence in the normal mouth, aural discharges and ulcerative stomatitis and gingivitis and its sole response to arsenic or iodo-bismuthate of quinine. He instances the occasional spread beyond these boundaries to the lung and intestinal canal. These organisms have come to be associated with infectious mononucleosis or glandular fever. Warren, in a recent review of 113 cases of leuchæmia, stated that Vincent's organisms were prominent in 50% of the cases; whether primary or secondary he could not tell. The author has analysed a series of 40 cases of myeloid leuchæmia and 60 cases of lymphatic leuchæmia, especially as regards the mode and season of onset of the disease, without detecting Vincent's infection as initiating the onset. When the age incidence of Vincent's stomatitis, noma and Vincent's angina is tabulated, it appears that these affections mostly occur within the narrow limits of three to seven years. The author examined the gums, teeth and tonsils of 168 children by aspiration and by staining all specimens with the Harris stain. He found that the Vincent organisms began to invade the mouth at the same age period at which the above infections occur. He found some mouths apparently in perfect health, but teeming with these organisms, and he suggests that they become pathogenic only in virtue of a lowering of the host's resistance. The author can give no support to the contention that acute leuchæmia is ever secondary to invasion by these organisms.

Radiostoleum and Calcium Salts in Rheumatism.

E. C. Warner (*Archives of Disease in Childhood*, October, 1932) has observed the effects on children attending a rheumatism clinic of a three years' administration of calcium salts in the form of calcium lactate or gluconate, 0·6 gramme (ten grains) twice a day, and also the effect of radiostoleum. Only the children who had taken these medicines continuously were considered. They were compared with a control group of children who had taken none or very little of the preparations. The daily amount of radiostoleum used was two cubic centimetres (half a drachm), an amount said to contain as much vitamin *A* as 45 cubic centimetres (one and a quarter ounces) of cod liver oil. Observations were confined in both groups to: (*a*) the number of relapses of acute rheumatism, subacute rheumatism, rheumatic carditis or chorea; (*b*) the number (among the patients showing relapse) with active carditis; (*c*) gain in weight of the children. Results were as follows. It seemed that definite rheumatic relapses were fewer in the groups having calcium and radiostoleum and that there was some benefit derived from giving malt and cod liver oil, particularly in subacute rheumatism and chorea. It did not appear that radiostoleum or any of the other preparations had any value in preventing an attack or a relapse of carditis. With regard to gain in weight, the author is in full

accord with Carey Coombs, who said that a child consistently gaining weight at a fast rate is very unlikely to suffer from a rheumatic relapse. From this series the children having the preparations of vitamin value have not gained weight any more rapidly than those to whom no medicine was given. In a series of fifteen of these patients no elevation in blood calcium was noted at periods of three or thirty months after administration. The author concludes that from these doses at least of vitamin *A* and *D* no protective effect against rheumatism or chorea can be assured.

ORTHOPÆDIC SURGERY.

Spinal Conditions.

LANGE (*Münchener Medizinische Wochenschrift*, September 2, 1932) states that claims for compensation following spinal injuries are often difficult to adjust and that the recognized X ray picture of osteophytes in a skiagram is not, as was formerly believed, a sign of a commencing *spondylosis deformans*, but really callus formation of the fractured vertebra. The effect of a vertebral injury on the whole vertebral column must always be considered. Adolescent kyphosis chiefly involves the lower thoracic vertebræ and is often associated with pain. The primary lesion here is probably an alteration in structure of the intervertebral body followed by disturbances in ossification of the vertebral body edges. The original four-cornered or trapeze-shaped vertebral bodies become wedge-shaped. The ætiology is unknown, but the condition is probably due to an endocrine upset. Sacralization as a cause of backache has been much disputed. It occurs in 3·5% of cases. No pains occur in the presence of a complete bilateral bony sacralization or a one-sided bony articulation sacralization. Pain, however, occurs when the surface of the assimilated vertebra runs obliquely so that the lower supporting surface of the vertebra is no longer upright, but slanting. In addition, a scoliosis also results. The cause of the pain is thought to be a stretching of the nerves at their emergence from the spinal canal, but no motor or sensory changes have been found. In these cases osteoarthritic changes arise early and must be treated as a disease.

Arthritis Deformans.

SCHOTTMÜLLER (*Deutsche Medizinische Wochenschrift*, September 9, 1932) states that cases of *arthritis deformans* due to hormonal deficiency occur, but are rare. The diagnosis is difficult, for, even if they respond to endocrine therapy, the diagnosis is not definite. He quotes several cases. A woman, aged fifty-three, gave a history of severe pains in both knees for several years, and so severe lately that she was unable to climb stairs. All treatment was ineffective till she was treated with daily injections of "Follikulin" (100 mouse units). After four days she showed definite improvement, and after six weeks was almost normal. On cessation of "Follikulin" all the symptoms and disabilities recurred. In this case the response to ovarian therapy indicates the ætiology of the condition. In any chronic joint condition not responding to ordinary therapy endocrine therapy should be tried.

Sciatica and Pseudo-Sciatica.

LANGE (*Münchener Medizinische Wochenschrift*, August 26, 1932) states that the diagnosis of sciatica is often difficult and that Lasègue's sign (that is, flexing the extended leg at the hip joint) is positive often in both. However, if then the foot is dorsiflexed at the ankle joint, in a case of true sciatica the pain will be accentuated along the sciatic nerve or one of its branches (Bragard's sign). This sign is unreliable if there should be painful fibrositic areas in the calf muscles or a shortening of the *tendo Achillis*. The treatment of an acute sciatica is application of warmth and the use of antineuralgic drugs. Massage should never be used, but for chronic sciatica massage is extremely useful. In pseudo-sciatica, heat and sedatives *plus* massage should be used immediately. Many patients have responded to this treatment when spa treatment has failed.

Periarthritis of the Shoulder.

J. A. DICKSON AND E. H. CROSBY (*The Journal of the American Medical Association*, December 31, 1932) describe their results from the study of two hundred patients. Their analysis shows that the clinical syndrome is not influenced in any respect by the presence or absence of calcium deposits as demonstrated Röntgenologically. The presence of calcium is no indication of the severity or the duration of the symptoms. The deposits have been found in shoulders that have had no symptoms, and have persisted in others after all symptoms had disappeared. Out of 200 patients with periarthritis of the shoulder, only 67 gave a history of trauma. The analysis indicates that foci of infection and glandular dysfunction would appear to be much more important than trauma as ætiological factors. McCullagh, biochemist, who made an analysis of the cheesy material from one of the patients, reported that there was sufficient calcium to account for the Röntgen shadow, but not sufficient phosphate or carbonate to account for the calcium in the form of these salts. The deposit was soluble in ether and had a somewhat fatty appearance, and he felt that it probably consisted of a calcium soap. General treatment consisted in removal of all foci of infection, in the teeth, tonsils and prostate. After thyreoidectomy there was almost invariably extremely marked relief of the joint symptoms within from forty-eight to seventy-two hours. Both hyperthyreoidism and hypothyreoidism had been encountered in their series of cases. The first was treated by operation and the latter with thyreoid extract. Coincident hyperglycæmia had been corrected by means of a typical diabetic regimen. Dietary regulation was insisted on, and, unless contraindications were present, the patients were given a high vitamin, low carbohydrate diet. Heliotherapy had proved extremely beneficial. Several of the patients showed little improvement with local measures until they had become sunburnt. During the acute stage with severe pain and possibly muscle spasm, rest of the shoulder, preferably in bed, was advised. Traction was applied both above and below the elbow, and the arm was fixed in moderate abduction and external rotation. Ice caps were applied to the shoulder. Cold applications were more efficacious in the acute stage, as any form of heat seemed definitely to increase the pain. On the third day sedative diathermy was given and the arm was passively moved once only. The treatment was carried out daily, and voluntary contraction of the deltoid and other muscles was encouraged to the point of pain.

Surgical Stimulation of Bone Growth.

A. B. FERGUSON (*The Journal of the American Medical Association*, January 7, 1933) concludes that interruption of the medullary blood supply to a metaphysis results in about 30% increase of longitudinal growth rate at that metaphysis. During the rapid growth period of adolescence this is the equivalent of about 3·0 millimetres (one-eighth of an inch) annually for each epiphysis affected. Such an increased growth rate continues for an indefinite time, probably at least three years, and more rapidly in the first year after operation than subsequently. Growth of tubular bones can be stimulated to gain about three millimetres for each epiphysis annually during the growing period by the simple process of drilling into the bone half way from the epiphyseal line or lines to the middle of the bone, inserting a knife or curette and disrupting the continuity of the medullary substance. This operation has been done in sixteen instances in which there was a short leg, up to October, 1932. Seven bones operated upon in four patients were examined from three to five months after operation. In each bone skiagrams showed a gain in length of from 1·5 to 3·0 millimetres (one-sixteenth to one-eighth of an inch) on the corresponding bone of the opposite leg. When medullary section is done on the tibia, it is done also on the fibula. The upper end of the femur is not used unless the shortening is great. The order of preference is: (i) lower end of femur, (ii) upper end of tibia and fibula, (iii) lower end of tibia and fibula, (iv) upper end of femur.

Special Articles on Treatment.

(Contributed by request.)

V.

THE TREATMENT OF ANTE PARTUM HÆMORRHAGE.

While hæmorrhage in the later months of pregnancy may be caused by a mucous polypus, varicose veins or carcinoma of the cervix, in the majority of instances it is due to one of two main conditions—accidental hæmorrhage or *placenta prævia*. Although symptomatically they have much in common, the treatment differs in essential particulars and it is most important to make a correct diagnosis. When in doubt, recourse to examination under anæsthesia should never be omitted.

Accidental Hæmorrhage.

Both as regards classification and treatment cases of accidental hæmorrhage may be divided into mild and severe groups, according to the following symptoms: absence of uterine contractions; albuminuria at least "one-quarter"; a temperature of 36·1° C. (97° F.) or pulse 130; dead *fœtus in utero*. Any two of these symptoms are sufficient to classify the case as severe, while three connote a very severe case. The method of treatment to be adopted depends on the period of pregnancy, the parity of the patient, whether she is in labour or not, the dilatation of the cervix, the condition of the membranes and the amount of blood lost.

Mild Cases.

Mild cases comprise the majority; the hæmorrhage is external and the maternal condition is generally satisfactory. Rest in bed, morphine, 0·015 gramme (one-quarter of a grain), and a tight abdominal binder are all that is necessary. Small doses of pituitary extract, 0·25 cubic centimetre, half-hourly for four doses, may be given to excite uterine contractions. A natural delivery is the general rule, and in many instances the fœtus is alive.

Occasionally bleeding may occur at about twenty-eight to thirty weeks; in these circumstances the amount of blood lost is small, bleeding causes no constitutional symptoms, and does not recur. Provided no marked degree of anæmia be present and that there are no other biochemical or clinical indications for interruption of pregnancy, the patient must be kept under observation and an endeavour made to allow her to proceed to as near term as possible.

More Severe Cases.

In more severe cases the hæmorrhage is usually of the mixed type, both concealed and revealed, with an increase in the amount of internal bleeding with the severer grades. The urine generally contains albumin and renal function tests indicate varying degrees of kidney insufficiency. Treatment depends on the amount of collapse and whether the patient is in labour or not. The outlook is greatly improved if uterine contractions be present.

(a) *Patients Not in Labour.*

1. If the patient be in fair condition, give morphine and pituitary extract as before mentioned, apply a tight abdominal binder and administer submammary or intravenous injection of saline solution. The value of submammary saline injection in preference to intravenous injection is stressed because of its universal application, especially if the practitioner be working in unfavourable surroundings. Sodium bicarbonate or sodium chloride (one drachm to the pint) is used and 5% to 10% glucose may be added. The infusion is given with a tube and funnel, to which are attached two large infusion needles. Each needle is plunged into the fold between the uplifted breast and the chest wall and the funnel is held one to two feet above the patient's head. The solution should be poured into the funnel at 46° C. (115° F.) so that it will reach the body at 37·8° C. (100° F.). Too cold infusion adds to the shock, while sloughing of the tissues may follow either too hot an injection or an excessive amount. One pint under each breast is enough and may be repeated, if necessary, every four hours.

2. If the bleeding still continues and more direct measures are necessary to control the loss, packing the vagina is indicated. Fortunately this is not often required, for its correct performance is not easy, especially for the practitioner working single-handed. If done properly, it will effectively control the hæmorrhage and stimulate uterine contractions. The main disadvantages are the amount of shock produced and the trauma to the vaginal mucosa with subsequent risk of sepsis. The bladder must be emptied and an anæsthetic given. Either the hand or a speculum being used to depress the posterior vaginal wall, pledgets of cotton wool, soaked in a mild antiseptic solution and wrung dry, are carefully placed in the fornices until the cervix is firmly surrounded. The vagina is then gradually distended until the vulva is reached. A "T" pad and firm abdominal binder are applied and morphine, 0·015 gramme (one-quarter of a grain), is given to allay pain. While one is waiting for contractions to occur in severe cases, transfusion with saline solution or blood should be done. Uterine contractions usually occur within a few hours, when the pack is removed and a vaginal douche is given. In any case the pack should never be left *in situ* for more than six to eight hours. With the onset of labour the membranes may be ruptured and pituitary extract given if necessary.

(b) *Patients in Labour.*

Rupture the membranes and give small doses of pituitary extract unless the contractions are strong. Apply a tight abdominal binder and treat any collapse with transfusions. During labour all patients should be treated like other toxæmic patients, by starvation and the free administration by mouth of 10% glucose in water.

Severe Cases.

In severe cases the hæmorrhage is of the concealed variety and the condition is noted usually in *multiparæ* with poor renal function. The methods of treatment have undergone radical alteration within recent years, as conservative measures have supplanted immediate operation. The profound shock noted in most cases should first be treated along the usual lines—elevation of the foot of the bed, the application of heat, administration of large doses of morphine and, if available, blood transfusion, otherwise saline solution. The height of the fundus in the abdomen should be marked on the skin with an indelible pencil. A tight abdominal binder is applied and pituitary extract in small doses given. Many patients will soon improve and with the onset of uterine contractions can be delivered by the vaginal route. As any patient incapable of recovering from collapse is far less capable of standing an abdominal operation, Cæsarean section should be reserved for those cases in which, after treatment of the shock, there is no improvement in the general condition as indicated by an increase in the size of the uterus and an increasing pulse rate. After removal of the fœtus and placenta, pituitary extract is injected directly into the uterine wall and the response is noted. When contraction is incomplete or absent hysterectomy should be performed. Naturally such patients are "poor risks" and the need for such treatment will decrease in frequency if energetic treatment of the shock and replacement of fluids lost have been done when the patient is first seen.

Other Methods of Treatment. Rupture of the membranes in all cases, whether in labour or not, is not advisable. This method would be valuable if we could be sure that contractions would inevitably follow. However, it is too uncertain and it is best never to rupture the membranes until the patient is definitely in labour. Forcible dilatation of the cervix, either manually or instrumentally, followed by rapid extraction of the fœtus will only aggravate the shock already present and should never be attempted.

Care During the Third Stage.

Remember that these patients have already lost much blood and that it is all important to prevent any further drain during the third stage. *Post partum* hæmorrhage kills more women than *ante partum* hæmorrhage. The placenta must be expressed or removed manually at the first sign of any bleeding after the child is born.

After-Care.

The consequent anæmia must be treated along the usual lines. Toxæmic patients are kept on a high carbohydrate diet at first and the renal function is estimated by the blood urea and urea concentration tests. If these reveal marked kidney involvement, the patient must be advised how best to avoid further pregnancies.

Placenta Prævia.

Once the diagnosis has been made, there is no expectant treatment for *placenta prævia*. The only exception is the rare case in which the pregnancy has reached thirty-two to thirty-four weeks, the mother is in good condition and in hospital. If the infant be especially desired, an attempt may be made to carry on the pregnancy until the thirty-sixth week or later, when Cæsarean section is performed. However, this procedure is risky and generally results in further hæmorrhages with resultant anæmia of the mother and a dead fœtus.

Various writers have shown that the following points must be remembered in all cases, since their neglect tends to maintain the number of maternal deaths.

1. Every patient should be transferred at once to a good hospital where she can receive the benefits of skilled attention. In a private house the measures adopted are frequently limited by the environment.
2. Insufficient attention is given to the first warning hæmorrhage and delay occurs until the devitalizing effects of a second or third hæmorrhage are apparent.
3. Before making a vaginal examination in a suspected case the doctor should be ready to deal immediately with any emergency which may arise suddenly, for example, packing the vagina, bipolar version, stimulation of the patient.
4. There is a tendency at times to attempt too much. Checking hæmorrhage should be the aim, and not immediate delivery with the risk of cervical laceration.
5. Forgetfulness of the fact that at all times during treatment blood must be saved.

The following factors must be taken into consideration in determining the correct line of treatment: the surroundings; the condition of mother and fœtus; the variety of *placenta prævia* noted; whether the patient is in labour or not; the dilatation of the os; the presence of other complications. The main objects of treatment are: (i) to arrest hæmorrhage, (ii) to evacuate the uterine contents, (iii) to control any further bleeding, (iv) to treat collapse and subsequent anæmia.

When the Os is Closed or Admits One Finger Only.

When the os is closed or admits one finger only, if the hæmorrhage be brisk, the vagina should be plugged as mentioned under accidental hæmorrhage, with removal of the plugs when labour ensues. In cases of lateral or marginal *placenta prævia*, if no further bleeding occurs, the membranes may be ruptured and the labour be allowed to proceed normally, or else a Willett's clamp may be applied to the fœtal scalp in vertex presentations. Bipolar version is indicated in those cases in which the hæmorrhage still continues, provided that the os admits two fingers. The temptation to dilate an os of smaller size so as to permit bipolar version must be absolutely resisted because of the dangers associated with such a procedure. Further reference to other lines of treatment will be made later.

When the Os Admits Two Fingers.

Patients Not in Labour.

Braxton Hick's bipolar version is the best treatment for the average case when the patient is not in labour and the os admits two fingers. It possesses the advantage of requiring no special appliances and in the hands of those with reasonable skill affords the safest course for the mother, although fœtal life is greatly endangered. The modern variation of first performing an external version so as to bring the breech over the pelvic brim is preferable to the original method whereby this was mainly achieved by intrauterine manipulations. After external version is performed two fingers are inserted through the cervix and, the placental margin being avoided, the membranes are ruptured. Pressure on the breech from the abdomen will usually bring a foot within reach, and it is extracted through the cervical canal. There may be difficulty in extracting the foot, and no attempt must be made to dilate the os. Pressure may be exerted on the breech to steady the foot while the cervix is gently stripped up over the foot or else the foot may be grasped with a tenaculum forceps and slowly extracted. The leg is then pulled down through the vagina until the foot appears at the vulva. A strip of gauze is attached to it and the opposite end with a weight of one to two pounds is hung over the end of the bed. The fœtal trunk is straightened in the uterus by abdominal manipulations and a tight abdominal binder applied. No attempt whatever must be made to deliver the child rapidly in the hope of saving it. Meanwhile restorative measures are adopted to combat any loss of blood. Delivery usually occurs within a few hours and, depending on the type of *placenta prævia* and the viability of the fœtus, a certain proportion are born alive.

Patients in Labour.

In marginal and lateral cases with regular uterine contractions the membranes may be ruptured and a tight abdominal binder applied. Willett's clamp or a fine tenaculum forceps may be applied to the scalp if bleeding continues. If the breech be presenting the membranes are ruptured and a leg brought down leaving the patient to deliver herself naturally.

When the Os Admits the Hand.

When the os admits the hand, if the head be well engaged in cases of lateral and marginal *placenta prævia*, the membranes should be ruptured and the patient left to deliver herself, or else Willett's forceps may be applied. In some instances in which the hæmorrhage is severe, internal version may be necessary.

When the Os is Fully Dilated.

When the os is fully dilated, usually the above mentioned methods will control any hæmorrhage, but occasionally forceps may have to be applied or else the fœtus extracted as a breech presentation.

Central Placenta Prævia.

In central *placenta prævia* the best treatment is bipolar version for all cases in which the fœtus is markedly premature, and especially if the hæmorrhage has been severe. The placenta must be perforated to reach the foot, and naturally the fœtal mortality is 100%. Willett's forceps are not very useful in this type of case. After version is performed the usual restorative measures are adopted.

The Scope of Cæsarean Section.

Although in 1899 Lawson Tait advocated Cæsarean section for *placenta prævia*, it is only within recent years that the operation has become popular. The strictly obstetrical indications are few and there is a risk of operative enthusiasm outrunning obstetric discretion. The main indication is for *primigravidæ* at or near term with a central or marginal *placenta prævia*, provided that little or no internal manipulations have been performed and that the child is alive. The operation is particularly indicated for the elderly *primipara* with a closed os and near term. It may also be performed under similar indications for *multiparæ*, especially when a living child is essential. Naturally the presence of other complications, such as contracted pelvis or the toxæmias, would influence recourse to this method of delivery. But these conditions are not common; central *placenta prævia* usually occurs at a stage when the fœtus is scarcely viable and also enfeebled from

the extent of placental separation. In general, bipolar version is the method of choice suitable for the majority of cases. It must also be remembered that in a not inconsiderable number of cases fœtal abnormalities exist and, if possible, an X ray picture should be taken before an abdominal section is performed.

Third Stage and After-Care.

Delivery of the child does not allow any relaxation of vigilance and blood must be saved at all costs along the lines already mentioned. There is a special risk of *post partum* hæmorrhage because of the anatomical position of the placental site. Restorative treatment by transfusions is often necessary before, during and after delivery.

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British Medical Association News.

SCIENTIFIC.

A meeting of the New South Wales Branch of the British Medical Association was held at the Royal Alexandra Hospital for Children, Sydney, on August 18, 1932. The meeting took the form of a series of clinical demonstrations by the members of the honorary medical staff.

Thrombocytopenic Purpura.

Dr. R. B. Wade showed three patients who were suffering from thrombocytopenic purpura.

The first was a girl, aged one year and eleven months, who was admitted to hospital on June 23, 1932, with a history of the left foot becoming black four days before admission. At first only the toes were affected. Later, on the same day the fingers were affected also, blisters appearing on them, and bruises being noted on the left calf, the right calf and the right leg. There was no bleeding from the gums or from the bowel.

On examination there was a line of demarcation along the dorsum of the left foot with absolute blackness of the toes, but a red blush beneath the skin, over the extensor tendons, showed that the gangrene was not central, but cutaneous. Bruising was also seen on the right buttock. The platelet count was low, below 60,000. Pneumococci were recovered from the fluid in the blisters on June 26, 1932, though later attempts at culture were ineffective. Blood transfusion was done on June 23, 1932, with 240 cubic centimetres of citrated blood and again on June 28, 1932, with a further 240 cubic centimetres. The bruises slowly cleared away and healing occurred on the fingers and toes with some sloughing of the terminal phalanges. Thiersch grafts were used on the hands and feet. The platelet count rose till on August 8, 1932, it was 230,000. The results of examination of the blood are set out in Table I.

The second patient was a boy, aged thirteen years, who was admitted to hospital on November 4, 1928, with a history that he had suffered from meningitis at the age of two years, that he suffered from epistaxis, and that during the previous two years he had bruised very easily. Two days before admission to hospital he complained of his right leg being sore. He was feverish and his appetite was poor. He did not vomit until the afternoon of admission. His bowels had acted well and he had bruises on his body for which he could not account.

Examination at the time of admission to hospital showed that the boy was very ill and delirious. His temperature was 40° C. (104° F.). His tongue was furred, but moist. His fauces were injected. He had many bruises on his body. His right thigh was very tender. His pain was related to muscles and not to bone.

Dr. Wade gave a short *résumé* of the patient's progress and treatment.

On November 13, 1928, 0·5 cubic centimetre of sterile milk was given by intramuscular injection, and the dose was increased by 0·5 cubic centimetre every three days.

On November 24, 1928, he was given a mixture containing iron and arsenic.

On December 1, 1928, he was given an intramuscular injection of twenty cubic centimetres of whole blood.

On December 15, 1928, he was given a blood transfusion of 220 cubic centimetres of citrated blood. The patient had attacks of epistaxis, varying in severity, every three or four days until the blood transfusion was given. He had no hæmorrhage until January 21, 1929. On January 22, 1929, a severe epistaxis occurred.

On February 8, 1929, the patient was given a pill containing 0·015 gramme (one-quarter of a grain) of copper sulphate, three times a day.

On February 12, 1929, the patient passed frequent blood-stained motions, and was given liver.

On March 13, 1929, 120 cubic centimetres of citrated blood were given by transfusion. On March 18 further bleeding from the nose occurred and continued intermittently until March 23, 1929.

On March 28, 1929, the blood vessel-bearing area on each side of the nasal septum was cauterized.

On April 5, 1929, slight epistaxis occurred. On May 26, 1929, no further bleeding having occurred, the patient was discharged to attend at the out-patient department.

The blood findings from November 5, 1928, to March 18, 1929, are set out in Table II.

The patient was readmitted to the ward on June 3, 1929. At this time numerous ecchymoses were present in the skin of the thorax and on both legs. There were large bluish areas due to subcutaneous hæmorrhage.

On June 11, 1929, the patient was given 180 cubic centimetres of citrated blood by transfusion.

On June 13, 1929, splenectomy was performed. The spleen was somewhat larger than usual, but no other macroscopic abnormality was present. On the day after operation the patient vomited some altered blood.

On June 18, 1929, the patient had a few skin lesions resembling varicella, and his temperature was raised. Within the next two days his condition improved, and on July 2, 1929, he was discharged from hospital. The blood

Table I.

Date.	Red Cells per cubic millimetre.	Hæmoglobin Value.	Colour Index.	White Cells per cubic millimetre.	Polymorphonuclear Cells.	Lymphocytes.	Monocytes.	Eosinophile Cells.	Platelets.	Reticulocytes.
June 23, 1932 ...	2,400,000	61%	0·89	26,300	58%	30%	11·5%	0·5%	50,000	—
June 28, 1932[1] ..	3,890,000	64%	0·81	12,800	71%	19%	9·0%	1·0%	150,000	1·0%
July 4, 1932 ...	4,800,000	85%	0·88	16,600	60%	28%	7·0%	2·0%	160,000	Scanty
July 11, 1932[2] ...	4,640,300	79%	0·84	13,800	67%	24%	7·0%	2·0%	160,000	—
August 8, 1932[3] .	4,600,000	90%	0·98	8,900	61%	30%	9·0%	—	230,000	—

[1] Coagulation time, 6 minutes 10 seconds. Retraction of clot not complete in one hour. Bleeding time 6 minutes.
[2] Coagulation time, 7·5 minutes. Bleeding time, 2·5 minutes.
[3] Coagulation time, 4 minutes.

TABLE II.

Date.	Red Cells per cubic millimetre.	Hæmoglobin Value.	Colour Index.	White Cells per cubic millimetre.	Polymorphonuclear Cells.	Lymphocytes.	Monocytes.	Eosinophile Cells.	Platelets.
November 5, 1928[1]	3,710,000	66%	0·8	7,600	78%	15%	7%	—	—
November 22, 1928	3,380,000	66%	1·0	7,000	78%	16%	4%	2%	—
November 30, 1928	3,290,000	65%	1·0	7,200	77%	15%	4%	4%	6,580
December 18, 1928	3,490,000	53%	0·7	12,500	61%	27%	7%	3%	Scattered
December 27, 1928	3,330,000	63%	0·9	8,300	65%	23%	7%	5%	—
January 8, 1929	3,720,000	68%	0·8	12,400	76%	13%	4%	7%	59,500
January 18, 1929	3,490,000	64%	0·8	8,200	70%	25%	3%	2%	60,000
January 31, 1929	4,640,000	70%	0·7	15,000[2]	77%	13%	5%	4%	—
February 12, 1929	3,000,000	60%	1·0	12,500	71%	24%	5%	—	30,000
February 26, 1929	3,700,000	61%	0·8	11,500	82%	10%	3%	5%	—
March 11, 1929 ..	3,530,000	66%	0·9	7,400	69%	25%	3%	3%	—
March 18, 1929 ..	3,460,000	70%	1·0	8,100	76%	19%	4%	1%	—

[1] Coagulation time, 3 minutes 5 seconds.
[2] Basophile cells, 1%.

findings from June 5, 1929, to September 2, 1929, are set out in Table III.

Dr. Wade's third patient was a boy, aged four years and four months, who was admitted to hospital on October 23, 1927. He had no history of hæmophilia, but had suffered from pneumonia seven days prior to his admission. Three days before the patient was admitted, the father noticed some bruising on both the patient's arms. Later on, a similar type of bruising appeared on the back, the feet and the left knee. Some bleeding occurred from the mouth and nose. No bleeding took place from the rectum, and there was no hæmoptysis. The patient had a slight cough.

On examination, the patient was very pale. He had some blood in his nostrils and a small submucous hæmatoma was present on the right cheek. The fauces were clear. Large subcutaneous hæmorrhages were present on the back, the left foot, the leg and the knee. The left knee joint was swollen and hæmorrhages were present on the back of both elbows and on the left ilium.

On October 23, 1927, the patient was given 0·3 gramme (five grains) of calcium lactate every four hours. On the following day a further hæmorrhage occurred into the right ear. The left foot was noticed to be cold, and it was thought that possibly early gangrene was present. The patient was given ten cubic centimetres of whole blood by intramuscular injection. On October 25, 1927, he was given 120 cubic centimetres of citrated blood by transfusion.

On October 27, 1927, the patient's condition was worse, though no fresh hæmorrhages had occurred.

On October 28, 1927, the patient was a little better and was given ten cubic centimetres of antistreptococcal serum *per rectum*. This dose was repeated on the following day.

On November 1, 1927, extensive superficial sloughing of the left foot was present and there was also some sloughing of the right ear. The hæmatoma on the back was becoming absorbed. On November 5, 1927, the patient received ten cubic centimetres of antistreptococcal serum by the rectum, and two days later, though the patients' general condition was good, amputation of the foot appeared to be indicated.

On November 22, 1927, a deep slough was present over the knee and a superficial slough was forming on the back.

On November 24, 1927, amputation of the foot was performed, and it was thought on November 30 that a large raw area would form over the knee.

On January 12, 1928, the stump was trimmed and a pedicle graft was applied to the knee.

On March 27, 1928, the patient was walking about on crutches.

On April 3 the patient was ordered calcium lactate and parathyreoid extract, and on April 17 a small area on the back and the knee had not healed. The patient was discharged from hospital and was told to report from time to time. The blood findings from October 28, 1927, to August 12, 1932, are shown in Table IV.

A Type of "Relapsing" Fever.

DR. E. H. M. STEPHEN showed a male patient, aged nine years, who was admitted to hospital with a history of pain and swelling of various joints and persistent pyrexia of five weeks' duration. There was some stiffness and loss of movement of the invertebral joints in the cervical region. A putty swelling of the wrists and dorsum of both hands was observed. This swelling varied in degree. A fortnight after admission pericardial friction developed. For eight weeks after admission the temperature chart showed a pyrexia reaching at times a point above 40° C. (104° F.). After six to eight days' pyrexia a normal temperature was recorded for four to five days, when there was a recurrence of pyrexia. This sequence of events persisted till the patient received a course of injections of "Novarsenobillon".

After the first injection the temperature fell to normal and remained practically normal ever since. The secondary anæmia, from which he was suffering, disappeared, and also the puttiness of the hands. At no time was the spleen palpable. Examination of the blood revealed neither malarial parasites nor spirillæ. All blood cultures were sterile. Von Pirquet's skin test and the Wassermann test gave no reaction. The blood count showed a neutrophile "leucocytosis" and secondary anæmia.

TABLE III.

Date.	Red Cells per cubic millimetre.	Hæmoglobin Value.	Colour Index.	White Cells per cubic millimetre.	Polymorphonuclear Cells.	Lymphocytes.	Monocytes.	Eosinophile Cells.	Platelets.
June 5, 1929	4,780,000	68%	0·7	7,800	77%	15%	7%	—	—
June 23, 1929	3,730,000	68%	0·9	12,800	72%	16%	8%	4%	186,500
July 2, 1929[1]	3,530,000	61%	0·8	13,000	73%	20%	5%	2%	171,400
August 5, 1929 ..	4,320,000	80%	0·9	8,700	—	—	—	—	129,000
September 2, 1929[2]	4,350,000	68%	0·7	6,600	69%	23%	8%	—	180,000

[1] Fragility: Hæmolysis commenced at 0·42% and was completed at 0·30% saline solution. The cells were slightly resistant.
[2] Fragility: Hæmolysis commenced at 0·4% and was completed at 0·28% saline solution, showing red cells of increased resistance.

Table IV.

Date.	Red Cells per cubic millimetre.	Hæmoglobin Value.	Colour Index.	White Cells per cubic millimetre.	Polymorphonuclear Cells.	Lymphocytes.[1]	Monocytes.	Eosinophile Cells.	Platelets.
October 28, 1927[2]	2,125,000	30%	0·7	40,000	37%	8%	5%	—	206,500
November 11, 1927	2,380,000	60%	1·2	13,000	55%	35%	9%	1%	50,800
November 24, 1927	3,510,000	67%	0·9	10,200	53%	43%	2%	2%	150,000
December 12, 1927	4,150,000	70%	0·8	7,200	50%	27%	20%	3%	539,000
August 12, 1932[2]	3,880,000	76%	1·0	9,400	63%	32%	4%	1%	270,000(?)

[1] Several normoblasts.

[2] Fragility: Hæmolysis commenced at 0·45%, complete at 0·36%. Coagulation time, 4½ minutes at room temperature. Bleeding time, 1 minute 20 seconds. Numerical anæmia with no hæmoglobin loss and slight lymphocytosis.

Post-Encephalitic Parkinsonism.

Dr. Stephen showed a female patient, aged two years. The parents could not recall any febrile illness. The patient began walking at fourteen months. Two months later the gait became staggering and she developed tremor of hands, arms and legs. She frequently fell. She was easily irritated and had turns of calling out at night and being difficult to pacify.

When she stood up, she developed a tremor, which increased in degree until she was placed at rest. After the patient had been sitting up, the head developed oscillatory nodding movements which ceased only when her head was supported. The arms likewise showed a coarse tremor. There was a riotous nystagmus. Various examinations of the blood revealed no abnormality. It was found that there was analgesia for a few weeks over the upper extremities, though not elsewhere. This analgesia did not persist.

She had been under observation for eighteen months and was at the time of the meeting well grown and of normal intelligence. Coarse tremor developed in the lower extremities with standing or walking, but she was able to get about without assistance. Her disposition appeared normal.

Epidermolysis Bullosa.

Dr. Stephen's third patient was a female, aged three and a half years. This patient was a fair-haired child of normal development. She showed scarring over the trunk and limbs where there had been large bullæ. There had been exfoliation of the nails of the fingers and toes. There were scars on the forehead and cicatricial areas on the lips and tongue.

The child was originally admitted to the hospital when but twenty-four hours old. The skin was uniformly reddened. The epithelium had partially separated over an area half an inch square on the right thigh. On the tongue the epithelium lay in folds and could be removed without bleeding. Epithelium was also peeling from the gums. The condition spread rapidly next day. There was a bullous condition of hands, thighs, buttocks and soles of the feet. Practically every part of the body had bullæ at one time or another.

In regard to the family history, the parents were both healthy, but were first cousins. Two children had died with the same complaint. There was one child living who had not suffered from this disease.

The baby was very ill for over a fortnight. She appeared to show improvement after two injections of twenty cubic centimetres of polyvalent antistreptococcal serum. She developed erysipelas three times in the first two years of life.

Dr. Stephen pointed out that the special characteristic of this disease was its strong family history. Bullæ were apt to occur as a sequence to any pressure, however trivial. Treatment was purely symptomatic.

Lymphangioma Circumscriptum of the Tongue.

Dr. Stephen's next patient was a male, aged seven years. He was first admitted to hospital at the age of fourteen months, with macroglossia and glossitis. This nævoid condition of the tongue rendered the tongue so bulky that it was difficult for the child to close the mouth effectually, and speech was only just intelligible. There had been various recurrent attacks of ulceration.

Chronic Ulcerative Colitis.

Dr. Stephen also showed a girl, aged ten years, who had a history of passing numerous motions with blood and mucus since the age of two and a half years, and there had been an irregular pyrexia.

At the age of seven years the patient was pale and wasted. She had marked tachycardia and persistent pyrexia. The operation of appendicostomy was performed by Dr. Shedden Davis. Colonic lavage was instituted and performed daily up till the present time. She had one course of vaccinotherapy with a pathogen-selective culture of streptococcus. She made gratifying progress. Since this time there had been one definite relapse which was checked after some weeks of treatment. Colonic lavage with "Albargin" was apparently of definite value. She was now a healthy-looking, well nourished child. The appendicostomy wound kept clean; there was no skin irritation. The colon was irrigated once a day. Examinations of the stool revealed coliform bacilli only.

Perthes's Disease.

Dr. P. L. Hipsley showed three patients who were suffering from Perthes's disease of the hip.

The first patient was a boy, aged nine years, who was admitted to hospital on April 12, 1932. The child's maternal aunt and grandmother had died from pulmonary tuberculosis. He had previously suffered from pleurisy (possibly pneumonia), measles, pertussis, and varicella. There was a vague history of the child having fallen in December, 1931. Three weeks before admission to hospital he walked with a limp on the left side and complained occasionally of pain. He was always tired and depressed. He refused food and had no energy. He had no night sweats and no night starts.

On examination the left hip was seen to be held in slight flexion, and there was definite limitation of adduction, abduction and extension. The von Pirquet test gave no reaction. On X ray examination slight irregularity of the head of the left femur was found; there was no evidence of tuberculosis.

The second patient was a girl who was admitted to hospital on April 14, 1931. There was no family history of tuberculosis. The patient suffered from scarlet fever in December, 1930. Four months prior to her admission to hospital the child complained of slight pain in the region of the left hip. She began to limp, the limp persisted and became more pronounced. No pain was present unless the child slept on the left side. The left leg had wasted, but no general loss of weight had occurred.

On examination the child was seen to walk with a limp. In addition to the wasting of the left leg, adduction was present, with slight limitation of extension and flexion. No reaction occurred when the von Pirquet test was made. On X ray examination the appearances were found to be strongly suggestive of Perthes's disease, probably of long

standing. The worm-eaten appearance of the lateral margin of the left femoral head, however, suggested the probable presence of tuberculosis. The child was placed in a double Hamilton splint with extension. The splint was allowed to remain for only six days and then it was removed and the child was sent to the convalescent home at Collaroy. It was found subsequently on X ray examination that the epiphysis of the head was reforming on the lateral aspect—it was less opaque to X rays.

The third patient was a girl, aged eleven years, who was admitted to hospital on August 26, 1931. There was no family history of tuberculosis, but the child had been in contact with children whose father suffered from tuberculosis. The history was that the child had limped for four months and had complained of pain in the right leg. At the time of admission the limp was more pronounced and the pain more severe. The child was not losing weight, had no night sweats and no night starts.

On examination of the right hip it was found that flexion, adduction, abduction and extension were all limited. Shortening to the extent of 1·25 centimetres (half an inch) was present. The von Pirquet test gave no reaction. X ray examination on August 26, 1931, revealed what was thought to be a modified form of Perthes's disease of the hip. On November 16, 1931, the appearances at X ray examination suggested that the lesion had healed. The child was discharged from hospital, but was kept under observation. In May, 1932, X ray examination revealed a little more flattening of the epiphysis of the right femur and irregularity of the neck of the bone; the appearances were typical of Perthes's disease.

Tuberculosis of the Hip Joint.

Dr. Hipsley also showed a boy, aged nine years, who was admitted to hospital on May 25, 1932. The child's stepfather's sister and the stepfather's sister's child had died of pulmonary tuberculosis. The child had previously suffered from measles and pertussis. There was a history of a fall eleven months prior to admission; pain occurred at intervals and a limp had been present in the right leg ever since.

At the time of admission to hospital the child was in plaster. After removal of the plaster the hip was held very stiffly. The von Pirquet test was applied; a reaction occurred with the human type of bacillus and no reaction occurred with the bovine type. X ray examination on May 30, 1932, revealed appearances suggestive of early tuberculosis of the hip. It was suggested that another examination be made at a later date for purposes of comparison. On August 1, 1932, another examination was made, and it was found that practically no change had taken place in the joint.

Hydatid Disease of the Lung.

DR. M. J. PLOMLEY showed a girl, aged seven years, who had been operated upon for hydatid disease of the lung. The family history was clear and the child's previous history contained records of pertussis and convulsions only. The child had taken ill six or seven weeks before her admission to hospital. She became very thin and frail, was feverish at times, and had a bad cough.

On examination at the time of admission it was found that the abdomen moved evenly; no tenderness or rigidity was present. There was a large, smooth, rounded, insensitive mass projecting from the lower border of the liver to the right of the mid-line towards the umbilicus. It was about five centimetres (two inches) in diameter. The heart was pushed to the left. The right pulmonary apex was dull to percussion in the third space anteriorly and in the fifth space posteriorly; the breath sounds in this area were bronchial and diminished. The percussion note at the right base was resonant and the breath sounds were diminished and vesicular. At the left base the percussion note was impaired and the breath sounds were harsh and vesicular. A positive reaction was obtained to the Casoni test and there was an eosinophilia of 15%. On X ray examination two large rounded shadows were seen in the chest, one at the right apex and the other at the left base; they were thought to be hydatid cysts. There was another rounded transradiant shadow towards the right base, containing free fluid. The appearances suggested the presence of a hydatid cyst either at the base of the right lung or on the upper surface of the liver.

Dr. Hipsley opened and drained a large hydatid cyst at the right apex. After spending some time at the convalescent home, the child returned to hospital, where a further X ray examination was made. It was reported that the rounded shadow at the left base was almost certainly hydatid. It was situated towards the posterior surface. Some irregular dulness in the mid-posterior position of the right lung suggested thickened pleura. Dr. Hipsley then resected the seventh and eighth ribs in the post-axillary line. The pleura was adherent to the pericardium in one place. No hydatid cyst was seen or felt. At a subsequent X ray examination slight fibrosis was seen at the site of the hydatid in the right lung. No hydatid could be detected in the left lung, though there was some pleural effusion and thickening on this side. Dr. Plomley explained that the patient would be operated on at a later date for the hydatid cyst in the liver.

Tuberculous Adenitis.

Dr. Plomley also showed a girl, aged eight and a half years, who was suffering from tuberculous adenitis. There was no family history of tuberculosis. The patient had previously suffered from pertussis and bronchitis. She had been in contact two years previously with a tuberculous patient for two months in a boarding house. The patient's illness began with lassitude and loss of weight for six weeks. She vomited occasionally for two weeks. For a period of forty-eight hours she passed frequent motions and complained of tenderness in the abdomen.

On examination she was pale, languid and hypotonic. In the abdomen a mass was felt; this was thought to consist of enlarged mesenteric glands and was situated above and to the left of the umbilicus. Examination of the chest revealed no abnormality. The von Pirquet test was applied; no reaction was obtained with the bovine type of bacillus, but a reaction occurred with bacilli of the human type. A positive reaction was obtained to the Mantoux test. The patient was given injections of tuberculin and was sent to the convalescent home at Collaroy on July 16, 1932. During the next two months the patient gained 2·7 kilograms (six pounds) in weight, but was readmitted to the Royal Alexandra Hospital on August 8, 1932, with a history of cough and sputum. On examination, moist sounds were heard over both bases and on the right side of the chest posteriorly. The enlarged glands could still be palpated in the abdomen. There was no cough or sputum.

Dr. Plomley pointed out that on April 16, 1932, an X ray examination was made. One enlarged calcified nodule was seen in the upper part of the right hilar region and scattered calcified foci were present in and about the left hilar region. There was a slight scar in the right subapical region; this was probably tuberculous, though no active focus could be detected. On August 5, 1932, a second X ray examination was made, when it was found that the changes were less pronounced than on the occasion of the first examination.

Neoplasm of the Thorax.

Dr. Plomley's third patient was a girl, aged eleven years. Her paternal grandfather, who had been in close contact with the patient, had died of pulmonary tuberculosis. Her father had suffered from hydatid disease of the lung thirteen years previously. The child gave a history of having suffered from measles.

The patient's illness began five months before her admission to hospital. She had attacks in which she would breathe heavily; her mother thought these attacks were due to asthma. The attacks became more frequent and the child was unable to run or to hurry on account of shortness of breath. For six months she suffered frequently from colds. The abdomen became enlarged. The child became tired rather easily and was losing weight.

On examination the patient was found to be thin. The edge of the liver was palpable five centimetres (two inches) below the costal margin on the right side; on the left side the liver was normal. There was a prominence of the

anterior thoracic wall on the right side of the chest; the veins were not enlarged. The right side of the chest moved less than the left. The vocal fremitus was diminished on the right side. The percussion note was dull over the right side of the chest extending downwards to the liver and backwards to the infrascapular region. Dulness was present on the left side to a distance of five centimetres (two inches) to the left of the sternum. The breath sounds were diminished or absent over the dull area; there were no accompaniments. The cardiac apex beat was situated in the sixth intercostal space, 11·5 centimetres (four and a half inches) from the middle line. A systolic murmur was audible at the mitral area. The blood count was normal. No reaction was obtained to either the Casoni or the Wassermann test. On X ray examination a rounded mass was seen lying probably in the upper lobe of the right lung, and there was a large collection of fluid on the right side of the chest, causing partial pulmonary collapse. The appearance suggested a hydatid cyst and possibly a neoplasm. It was thought that another X ray examination should be made after aspiration of the fluid. On aspiration, only one or two cubic centimetres of blood were obtained. The patient was sent for deep X ray therapy to the Royal Prince Alfred Hospital on May 30, 1932.

On June 11, 1932, the patient had had six exposures to deep X ray therapy. She was to have six weeks' rest and to report again. Clinically, considerable improvement was noted. There was no dulness to the left of the sternum, and on the right side the dulness was localized in a small area. On August 5, 1932, the child reported again. She had gained in weight. On X ray examination some thickened pleura was found in the right axilla. The mass had disappeared.

Meningococcal Meningitis.

Dr. Plomley also showed a boy, aged one year and eight months, who had suffered from meningococcal meningitis without complications or sequelæ. There was no history of tuberculosis in the family, and the child had not previously been ill. The illness began with vomiting five days before the child's admission to hospital. He then became drowsy and feverish and refused food. On examination he looked ill and cried continually. No abnormality was found, except retraction of the head and slight stiffness of the neck. A lumbar puncture was made. The cerebrospinal fluid was turbid and under increased pressure; 25 cubic centimetres were removed. Meningococci were found in a smear and were also grown on culture. Ten cubic centimetres of antimeningococcal serum were given intrathecally and 20 cubic centimetres by intramuscular injection. On April 30, 1932, a further injection of 30 cubic centimetres of serum was given intramuscularly. On May 1, 1932, the temperature had fallen. Forty cubic centimetres of turbid fluid were removed by lumbar puncture, and five cubic centimetres of serum were given into the spinal theca; 15 cubic centimetres were given intramuscularly.

From May 3 to May 22, 1932, lumbar puncture was performed every two or three days and serum was administered, 55 cubic centimetres being given intrathecally and 200 cubic centimetres by intramuscular injection. On May 14, 1932, the cerebro-spinal fluid was clear. On June 1, 1932, the patient was very well. On June 10 meningococci were found in swabbings from the throat and naso-pharynx. On July 18, 1932, organisms were still present in the nose and throat. The child's tonsils and adenoids were removed and organisms subsequently disappeared from the throat and nose.

Erythrœdema.

DR. D. G. R. VICKERY showed four patients who were suffering from erythrœdema. Two girls were aged seven and a half and fifteen months, and two boys were aged eleven and nineteen months respectively. These children manifested the usual clinical appearance. In one instance the previous history was clear and the child was unable to lift her head for six weeks. In another instance the child had been losing weight and had been disinclined for food for a period of four months. She was supposed to have had mild German measles. For two months she had been extremely irritable and had refused her food; though she had walked, she discontinued doing so. One boy had been sick for six months after a sudden gastric attack. He became irritable and refused food. He had had medical advice on a number of occasions and had been treated for teething, gastro-enteritis, phimosis and various skin rashes. The fourth child had become cranky and troublesome six weeks before admission and had a "teething rash". She was restless at night and refused food. She had ulcers on her gums and did not mind the light. She flopped about and fell forward. In this instance the leucocyte count was of interest. The cells numbered 22,600 per cubic millimetre, and the differential count was: polymorphonuclear cells, 60%; lymphocytes, 30%; monocytes, 8·5%; eosinophile cells, 1·5%.

Still's Disease.

DR. LINDSAY DEY showed a girl, aged nine years, who was suffering from Still's disease. The patient had suffered from stiffness of the knees for six years. Enlargement of the finger joints was present. The patient complained of rheumatic pains and the spleen was palpable. A slight numerical anæmia was present. The serum did not react to the Wassermann test. On X ray examination no abnormality was seen in the spine or in the hands. The bones around the knee joints were slightly deformed, but presented no definite articular changes.

Achondroplasia.

Dr. Dey also showed a boy, aged ten years, who was suffering from achondroplasia. He was admitted to hospital in convulsions. There was a previous history of convulsions. The patient's appetite was prodigious. Enuresis was present and there was a tendency to constipation. There were five other children in the family and they were alive and well.

Acholuric Jaundice.

DR. MARGARET HARPER showed a boy, aged five years, who was admitted to hospital on June 13, 1932. Eighteen months previously the child suffered from weakness, pallor, crankiness, anorexia and loss of weight. He was a patient at the Royal Prince Alfred Hospital and improved under treatment. For three months before his admission to the Royal Alexandra Hospital he became gradually worse again, was losing weight and had anorexia and pallor. It was stated that the patient had always had "a large stomach". The patient was a premature baby and was jaundiced during infancy.

On examination at the time of his admission to hospital, the skin had a yellowish tinge and the lips and mucous membranes were red. The tongue was smooth and pale. The teeth were carious. The abdomen was full; the liver was slightly enlarged and the spleen was considerably enlarged. On June 14, 1932, the following findings were noted on examination of the blood:

Erythrocytes, per cubic millimetre ..	2,550,000
Hæmoglobin value	48%
Colour index	0·9
Leucocytes, per cubic millimetre	17,800
Platelets, per cubic millimetre	284,600

Some polychrome staining was present. The cells were irregular; three normoblasts and one megalobiast were seen with each hundred leucocytes. A fractional test meal revealed a small amount of hydrochloric acid with an excess of mucus. No reaction occurred to the Van den Bergh test. In the blood fragility test hæmolysis occurred at 0·52% and was complete at 0·45%. The fragility was increased. No reaction occurred to the Wassermann test.

On June 26, 1932, the erythrocytes numbered 3,160,000, the leucocytes 16,500, and the blood platelets 105,350 per cubic millimetre. On July 8, 1932, the patient became slightly jaundiced, with pyrexia. On July 22 the erythrocytes numbered 2,620,000, the leucocytes numbered 16,900, and the blood platelets 160,000 per cubic millimetre. On X ray examination no changes were found in the skull, but slight periosteal changes were found in the right femur and fibula.

On July 29, 1932, the Van den Bergh test was carried out. The direct reaction was not obtained, but the indirect reaction was present. Nine units of bilirubin were present in each cubic centimetre of serum.

On August 3, 1932, splenectomy was performed. The following day the platelet count was 235,000 per cubic millimetre.

On August 5, 1932, the erythrocytes numbered 3,280,000, the leucocytes numbered 22,400, and the platelets 233,000 per cubic millimetre.

On August 12, 1932, the blood count was as follows:

Erythrocytes, per cubic millimetre ..	3,430,000
Hæmoglobin value	67%
Colour index	0·9
Leucocytes, per cubic millimetre	15,500
Platelets, per cubic millimetre	380,000

The reticulocytes were 1%. In the fragility test hæmolysis commenced at 0·6% and was complete at 0·42%. No reaction occurred to the Van den Bergh test. On August 15, 1932, the child was much improved in colour and general appearance.

NOMINATIONS AND ELECTIONS.

THE undermentioned have been elected members of the New South Wales Branch of the British Medical Association:

Bradfield, Stanley George, M.B., B.S., 1930 (Univ. Sydney), 23, Park Avenue, Gordon.
Cunningham, Norman Charles, M.B., B.S., 1930 (Univ. Sydney), 315, New South Head Road, Edgecliff.
Hobson, Arthur Francis, M.B., B.S., 1930 (Univ. Sydney), 10, Jersey Road, Strathfield.
Huntley, Ralph Clifford, M.B., B.S., 1930 (Univ. Sydney), 41, Francis Street, Kogarah.
Lewis, Ronald Awstun, M.B., B.S., 1930 (Univ. Sydney), District Hospital, Wagga.

The undermentioned have been elected members of the Victorian Branch of the British Medical Association:

Green, Eileen Eva Hamill, M.B., B.S., M.Sc., 1932 (Univ. Melbourne), Homœopathic Hospital, St. Kilda Road, Melbourne.

Booth, Robert Philip, M.B., B.S., 1932 (Univ. Melbourne), Alfred Hospital, Prahran, S.1.

Obituary.

WILLIAM HENRY WESTON.

WE regret to announce the death of Dr. William Henry Weston, which occurred on February 26, 1933, at Sydney, New South Wales.

Correspondence.

THE TREATMENT OF ASTHMA.

SIR: I noted on reading the article by Dr. G. C. Willcocks, dated January 21, 1933, his reference to the possible effects of altitude on asthmatics, and thought that slight experience I have had in this direction might be of interest.

During 1932 I took three men to a height of 5,000 feet on different occasions, each having a fairly severe attack of asthma. Each was a young, robust man, suffering occasional isolated, fairly severe attacks; and each was used to aircraft. Verbal communication was maintained by earphones, and the patient could describe his symptoms on inquiry at any time.

The first case, on two occasions he ascended, got definite relief at about 4,300 feet. The second had no distress at 4,500 feet, and the third got some relief over 4,500 feet.

From the patients' statements, the improvement appeared gradually after 3,000 feet, and in each the spasm returned during descent and remained after landing, being worse after the flight in case number 2. Each responded immediately to adrenaline. Some upper respiratory trouble was found present in all three. The machine used was quite open, and each occasion was a warm, sunny morning.

Yours, etc.,

EDWARD A. DALEY, M.B., B.S., (Melbourne),
Medical Officer, Royal Australian Air Force.

Point Cook,
January 27, 1933.

MODERN OPTOMETRY.

SIR: A recent editorial and subsequent correspondence in your journal, concerning modern optometry and its educational objective, indicate considerable misapprehension on the part of the writers.

Modern optometrical education throughout the English-speaking world seeks to safeguard the public by insuring that, so far as possible, all cases requiring medical treatment or advice shall be directed to the ophthalmic surgeon. The Institute of Optometrists of New South Wales, which is the largest optometrical institute in the Southern Hemisphere and the only purely optometrical institute in New South Wales, has for over a quarter of a century sought only the public welfare by raising the ethical and educational standard of its members *pari passu* with the standards obtaining in England and America.

The use of the word "diagnosis" seems to have led to confusion in the minds of those opposing optometry. Optometrists seek only to be in a position to differentiate the abnormal from the normal eye. The making of diagnoses to the public is the duty of the ophthalmic surgeon, to whom the optometrist is morally bound to refer his patients presenting any departure from normality. This paramount duty has been and is constantly urged on all students and members of the Institute. Modern optometrists have no desire whatsoever to trespass in the slightest degree on the domain of medicine, nor could they if they so desired, for the practice of optometry is definitely defined in all optometry acts. The educational endeavours of the Institute have been directed solely to making the optometrist more highly skilled in refraction and the recognition of the abnormal eye. The standard adopted is only that common to American universities and English educational bodies for more than a decade, and every possible endeavour has been made to bring it before the ophthalmological branch of the British Medical Association for detailed criticism.

We have no desire whatsoever to prolong this discussion, but in fairness to the Institute and optometry throughout the English-speaking world, we make this statement, the verification of which we would be pleased to make available to your journal or any reader who should so desire it.

For and on behalf of the Council,

C. CLIFTON WILSON,
President.

Colonial Mutual Chambers,
74, Pitt Street,
Sydney,
February 10, 1933.

[There is no "ophthalmic branch of the British Medical Association" in New South Wales; nor is there any section of the New South Wales Branch of the British Medical Association devoted to the study of ophthalmology. —EDITOR.]

Research.

A RESEARCH SCHOLARSHIP.

ADVICE has been received from the High Commissioner's Office, London, by the Commonwealth Department of Health, that the Trustees of the Lady Tata Memorial have offered to applicants within the British Empire two scholarships for research in blood diseases, with special reference to leuchæmia.

The scholarships, which are each valued at £400 *per annum*, and will be tenable for one year from October 1, 1933, and renewable up to the normal maximum tenure of three years, will be open for award in June, 1933. They will be available to persons of both sexes and will be ordinarily awarded on a whole-time basis. The appointees however, may hold part-time teaching posts if their duties in the latter will not, in the opinion of the Trustees, prevent the devotion of their chief interests to the specified research.

Applications must reach the Secretary, Lady Tata Memorial Trust, Capel House, 62, New Broad Street, London, E.C.2, not later than April 15, 1933.

Candidates must furnish advice as to name, age, sex, nationality, qualifications, the proposed line of research and methods to be used, the institute or laboratory in which the research is to be done, and the name of the director who will supervise it. Testimonials, in a confidential letter addressed to the Secretary, should be sent at the same time by not more than three persons able to speak from personal knowledge of the candidate's character, ability and experience.

Books Received.

CHRONIC RHEUMATISM AND THE PRE-RHEUMATIC STATE, by J. D. Hindley-Smith, M.A., M.R.C.S., L.R.C.P.; 1932. London: H. K. Lewis and Company, Limited. Crown 8vo., pp. 154. Price: 5s. 6d. net.

MATERIA MEDICA FOR NURSES, by A. M. Crawford; Second Edition; 1933. London: H. K. Lewis and Company, Limited. Crown 8vo., pp. 98. Price: 3s. 6d. net.

Diary for the Month.

MAR. 6.—New South Wales Branch, B.M.A.: Organization and Science Committee.
MAR. 7.—New South Wales Branch, B.M.A.: Ethics Committee.
MAR. 10.—Queensland Branch, B.M.A.: Council.
MAR. 14.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
MAR. 15.—Western Australian Branch, B.M.A.: Branch.
MAR. 15.—Victorian Branch, B.M.A.: Clinical Meeting.
MAR. 21.—New South Wales Branch, B.M.A.: Medical Politics Committee.
MAR. 22.—Victorian Branch, B.M.A.: Council.
MAR. 24.—Queensland Branch (B.M.A.): Council.
MAR. 28.—New South Wales Branch, B.M.A.: Council (quarterly).
MAR. 30.—South Australian Branch, B.M.A.: Branch.
MAR. 30.—New South Wales Branch, B.M.A.: Annual Meeting.

Medical Appointments Vacant, etc.

FOR announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser", page xvi.

BRISBANE MATER CHILDREN'S HOSPITAL, BRISBANE, QUEENSLAND: House Physician, House Surgeon.
GOVERNMENT OF TONGA: Chief Medical Officer.
MATER PUBLIC HOSPITAL, BRISBANE, QUEENSLAND: Resident Medical Officers.
NEWCASTLE HOSPITAL, NEWCASTLE, NEW SOUTH WALES: Junior Resident Medical Officer.
THE NEW SOUTH WALES COMMUNITY HOSPITAL (INCORPORATED), SYDNEY: Honorary Orthopædic Surgeon.
TIBOOBURRA DISTRICT HOSPITAL, TIBOOBURRA, NEW SOUTH WALES: Resident Medical Officer.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associated Friendly Societies' Medical Institute. Mount Isa Mines. Toowoomba Associated Friendly Societies' Medical Institute. Chillagoe Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their agreement to the Council before signing. Lower Burdekin District Hospital, Ayr.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor", THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

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